



119 WEST 40th STREET
NEW YORK, N. Y.

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JULY 1922

VOLUME XXX

No. 1

DETROIT is to have a \$25,000 motor boat race, over a course similar to the Gold Cup, in the Detroit River, on Labor Day, 1923. The race will be conducted by the Yachtmen's Association of America and modelled after the automobile races conducted annually on the Indianapolis Motor Speedway. It will be known as the International Motor Boat Sweepstakes. The distance will be 150 miles. The race will start at 2 p. m. and it is estimated that the runabouts entered will have a maximum speed of 50 miles an hour.

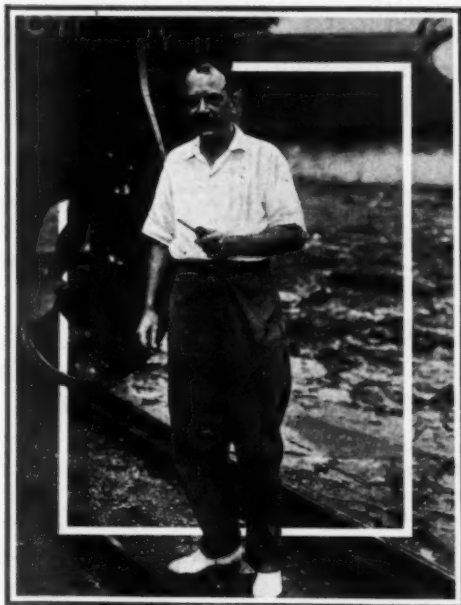
This race will be limited to boats powered with engines of not over 1350 cubic inches piston displacement, the craft must have a minimum water line length of 25 feet and beam of five feet, and a passenger capacity of two. The boats must show a speed of not less than 40 miles an hour in the qualifying trials. The course will probably be about $2\frac{1}{2}$ miles to the lap, with single turning buoys at each end.

In the race the competing craft must carry full equipment, the engine compartment must be entirely closed in and the exhaust under water or at the stern.

No change in the rules can be made for 18 months and the rules already adopted now must stand until after the 1924 race. If any changes are suggested they can not be made effective until the 1925 event, which gives the boat builders an opportunity to perfect a particular type of craft, without worrying about the possibility of a change in rules. The race committee appointed will conduct the first three races.

The \$25,000 prize fund will be provided by the Yachtmen's Association of America and will probably be divided as follows: \$15,000 first; \$5,000 second; \$2,500 third; \$1,500 fourth; \$1,000 fifth.

The Yachtmen's Association of



Commander Henry A. Jackson, owner and skipper of *Victory II*, thoroughly a Corinthian motor boatman and one of the best fellows the sport has ever known. *Victory II* will soon ship a new mate and MoToR BOATING joins all yachtmen in offering congratulations

America was organized on Monday, June 12th, at a meeting of yachting enthusiasts at the Detroit Athletic Club. The idea of the organization was discussed during the recent 500-mile race at the Indianapolis Motor Speedway, by Commodores Gar Wood, Detroit; H. B. Greening, Hamilton, Ont.; Carl G. Fisher and James A. Allison, of Indianapolis; Webb Jay, Chicago; Charles F. Chapman, New York City, and Jules Goux, Paris.

An informal meeting was held in Detroit on June 1st and the matter discussed in more detail. As a result of the two meetings articles of association and racing rules were drawn up for consideration at the meeting on Monday. With minor alterations these were accepted.

The Yachtmen's Association of America is an international organization and any yachtman in the United States, Canada or foreign countries is eligible to membership. While the race will be its leading activity at the start the organization will be incorporated to look after legislative matters, navigation aids and other activities of interest to the yachtman.

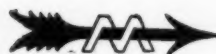
Commodore Garfield A. Wood, Detroit Yacht Club's chief executive, is the first president of the organization. The seven vice-presidents are: A. A. Schantz, Detroit; Sheldon Clarke, Chicago; Edsel B. Ford, Detroit; S. B. Egan, Buffalo; W. B. Wilde, Peoria; H. B. Greening, Hamilton, Ont.; Carl G. Fisher, Indianapolis. The secretary and treasurer is J. Lee Barrett, who now holds a similar office in the Detroit Gold Cup & Harmsworth Trophy Committee.

The executive committee consists of A. A. Schantz, Detroit, chairman; Col. Thos. A. Duff, Toronto; Webb Jay, Chicago; Commodore Fred R. Still, Detroit; Charles F. Chapman, New York.

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MoToR BOATING is published monthly by the International Magazine Company, William Randolph Hearst, president; C. H. Hathaway, vice-president; Ray Long, vice-president; Joseph A. Moore, treasurer; W. G. Langdon, secretary; 119 West 40th Street, New York, N. Y., U. S. A. Single Copies, 25 cents. Yearly subscription in United States and Canada, \$3.00. In foreign countries, \$4.00. When you receive notice that your subscription has expired it is best to renew it at once, using the blank enclosed. When requesting a change of mailing address, give the old as well as the new one. Allow four weeks for the first copy to reach the new address. Copyright, 1922, International Magazine Company (MoToR BOATING).

Fit 'er Out with Famous



MICHIGAN

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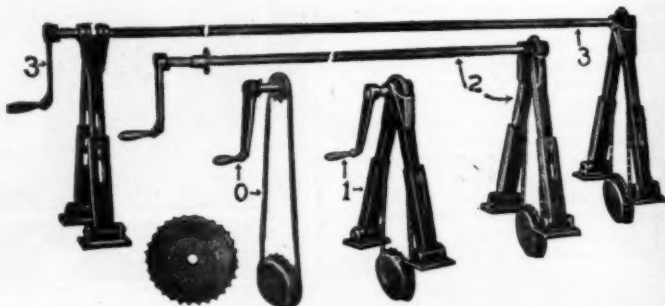
YOU NEED OUR CATALOG

Michigan Propellers

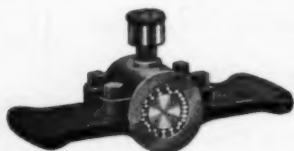
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Write today. Our illustrated catalog with prices is valuable to every boat owner. Free on request.

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JUNE, 1922

MOTOR BOATING

MoToR BoatinG's Advertising Policy

It is the policy of MoToR BoatinG to publish only the advertisements of responsible companies. We recognize that it is due to our readers to use the same care in the selection of advertisers as we do in the selection of the editorial contents.

When you see a product advertised in MoToR BoatinG, you may be sure that it is backed by a reputable advertiser, morally and financially responsible, honest in his intention to give you your full money's worth, therefore safe to do business with.

MoToR BoatinG will not accept advertisements from those who are not financially able to pay for their advertising. MoToR BoatinG does not place the reliable advertiser in direct competition with the unreliable.

MoToR BoatinG has long led all boating magazines in volume of circulation and volume of advertising per issue. It also leads in quality of circulation and quality of advertising.

It is quantity and quality of circulation that makes a magazine most valuable for the advertiser. It is quantity and quality of advertising that makes the magazine most valuable to the reader as a buying guide.

MoToR BoatinG is a reliable buying guide of all worth-while marine products.

You are safe in buying from MoToR BoatinG advertisers.

MoToR BoatinG

119 WEST 40th STREET

NEW YORK, N. Y.

When writing to advertisers please mention MoToR BoatinG, the National Magazine of Motor Boating, 119 West 40th Street, New York

Bully!

My Dear Mr. Chapman:

This advertisement is bully. It looks like good business, not only for your readers and advertisers, but for all interested in the boating game.

Very truly,

JOHN J. AMORY.

(President Consolidated Shipbuilding Corporation)

June 2, 1922.



ANY prominent members of the marine industry have congratulated us on the stand taken in the statement of advertising policy reproduced above. To restrict our pages to advertisements of reliable products offered by responsible manufacturers and dealers—that is the policy that is best for the reader and the advertiser.

MoToR BoatinG is sincere in its efforts to build the boating business into a bigger and better industry. We believe that a strong magazine with a thoroughly constructive policy is the biggest agency for the promotion of boating interests—the best form of propaganda for converting more and more persons to the pleasures of boating.

When readers acquire implicit confidence in advertised marine products, when manufacturers find that their advertising statements are accepted without reserve, then our power to serve both is immeasurably increased. Such confidence has already been established with those who know MoToR BoatinG best.

MoToR BoatinG is a reliable buying guide of worth-while marine products.

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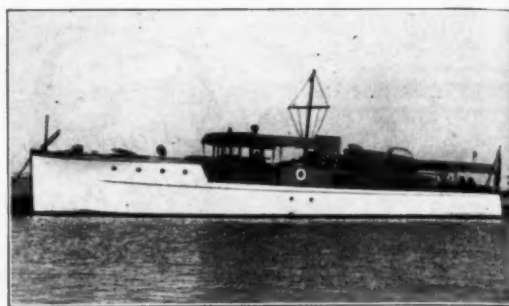
UMI

Cruisers

Cruisers in lengths of 36 to 125 feet of modified V-bottom express cruiser type or model (round bilge) design.

Standardized Express Cruisers in lengths of 42 and 54 feet available for immediate delivery.

Great Lakes Cruisers reflect the utmost obtainable.



76-footer

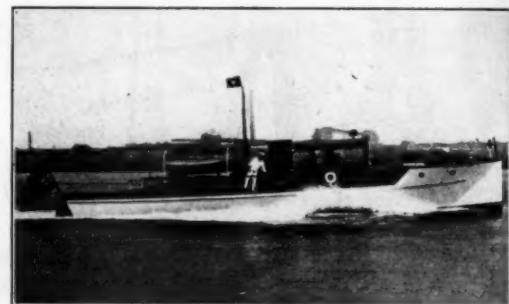


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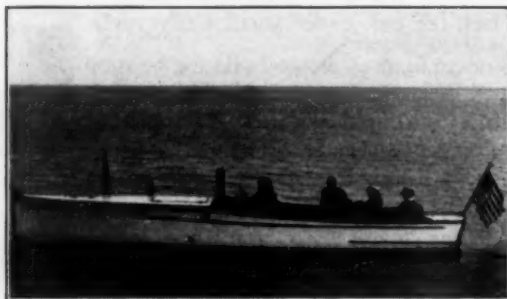
Runabouts

Runabouts in two sizes: 30-footers and 26-footers of fast or medium speed.

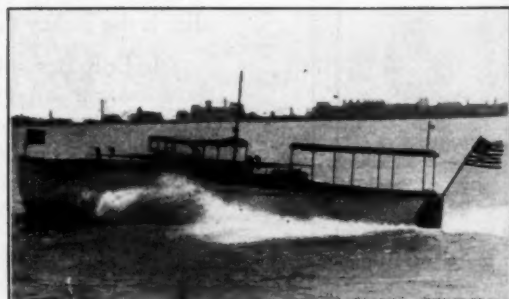
Great Lakes Runabouts are the very finest the market affords.



62-footer



30-foot runabout

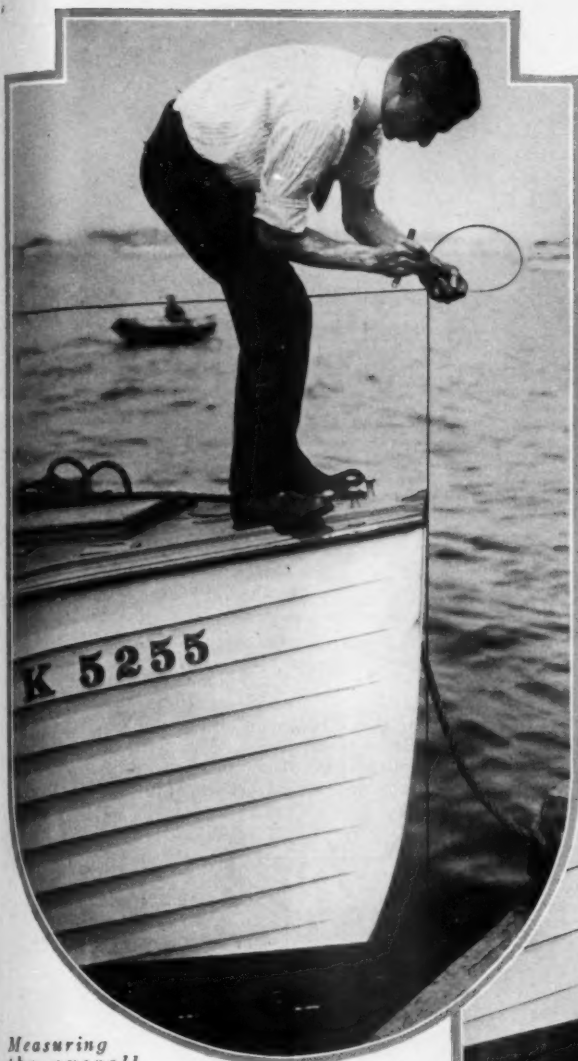


42-footer

Great Lakes Boat Building Corporation

Milwaukee, Wisconsin

Largest Builders of Express Cruisers in America



Measuring the overall length to the plumb line at the stem



119 WEST 40TH STREET
NEW YORK

Photographs by M. Rosenfeld



The overhang at the waterline, forward and aft is deducted from the overall length

Measuring and Rating

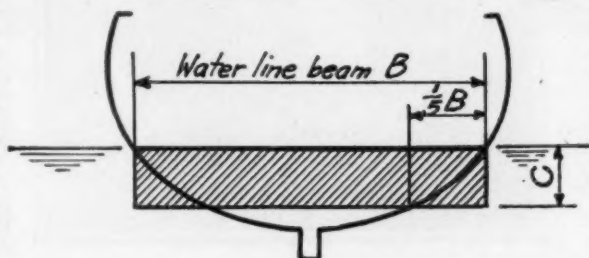
An Explanation of the Intricate Process of Determining a Boat's Measurements According to the Racing Rules

By F. W. Horenburger

Surveyor, American Power-Boat Association

FOR the purpose of equalizing the widely varying condition of boat construction when the attempt is made to race under more or less uniform circumstances, it is necessary that some basis of handicapping be resorted to. It is the general impression among the uninformed yachtsmen that the racing rules of whatever kind are merely a subterfuge resorted to by racing committees to juggle the figures and handicaps so that their favorites will win the race. This is far from being the case. It is true that due to the ex-

treme differences in sizes and shapes of boats it is very difficult to formulate a rule or handicapping method which will take into consideration every little detail of construction and power of the boats under discussion. There are long narrow boats, and short wide boats, some with large motors, and some with small motors. The speed possibilities of these will vary over the widest possible range. These many considerations make it extremely difficult to devise any one rule which will apply universally to all conditions.



The rectangular section assumed equivalent to the actual midship sectional area is the product of B and C

It has been shown by many years' experience that the racing rules and handicapping formula adopted by the American Power-Boat Association come very close to suiting the average conditions as found in the wide range of boats in existence to-



It is essential that the straight-edges be clamped together in a true rightangle

day. In some of the prominent races on Long Island Sound last summer in which the rules were rigidly enforced it was shown that the rules were practically perfect. Over a distance of eighty odd miles the variation in corrected times of finish was only a little over thirty minutes for the first seven boats to complete the race. The other contestants were delayed in one way or another so that the time lost brought them outside of this group. But for the delays they would have also come within this circle and demonstrated the complete correct-



Great care must be exercised in determining the draft or dimension of C for the section area

ness of the rule under which the race was run. The process of measuring and rating a boat for racing purposes under the rules of the American Power-Boat Association is relatively simple once it is understood. The formula under which the great majority of our cruising boats would be classified is

$$\text{Rating} = 11 \sqrt{\frac{\sqrt{L. W. L. \times H. P.}}{M. S.}} + 11$$



The overhang at the sides at the waterline is an important figure

American Power-Boat Association

Certificate of Rating

Date June 5, 1922
 Name of Boat Thos's Mc
 Yacht Club New York Motor Boat Club
 Owner Thos. Mc
 Address 167 R. 2nd St.
 Division 1st
 Engine: Cyls 6 H.P. 40
 Make of Engine International
 Bore 5 1/2 In. Stroke 7 In. L. W. L. 22.75
 H. P. Rating (at above R. P. M.) 22.75
 L. O. A. 20.29 L. W. L. 26.28
 B. E. 8.72 Depth C. 1.13 L. W. L. 26.28
 Area M. S. by Measurement 9.28
 Area M. S. by weight 9.28
 Rating 38.20
 Date when Measured June 1, 1922
 Notation of Condition of Boat when Measured Proper trim
 Measurer's Signature J. H. Armstrong

Replica of an actual rating certificate containing all required information

This expressed in words can be stated as follows: Eleven times the cube root of the square root of load waterline, multiplied by the horsepower and divided by the area of the midship sections in square feet, all plus eleven. In order to solve this formula it is of course necessary to determine the various dimensions from the
 (Continued on page 90)

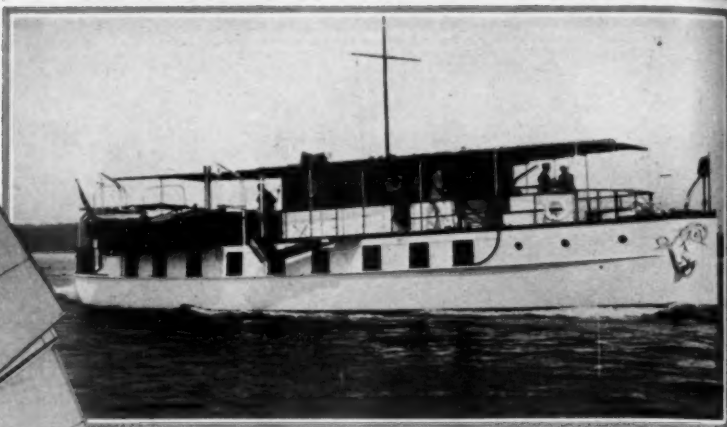


HARPOON AND HER OWNER,
COMMODORE M. S. CORNELL, JR.

This fine cruiser, the fourth in Commodore Cornell's family, can well be termed the Pride of the Connecticut. She is a beautiful little ship in every way, a beautiful design, beautifully built, well arranged both inside and out and, what is more important, she runs true to form. At full speed or throttled way down or anywhere in between Harpoon is a success. Her length is 36 feet

The boat shown at the right is Bolo, owned by Henry D. Whiton of New York. She is a Mathis build motor house yacht and is a type which is proving very popular in all waters this year

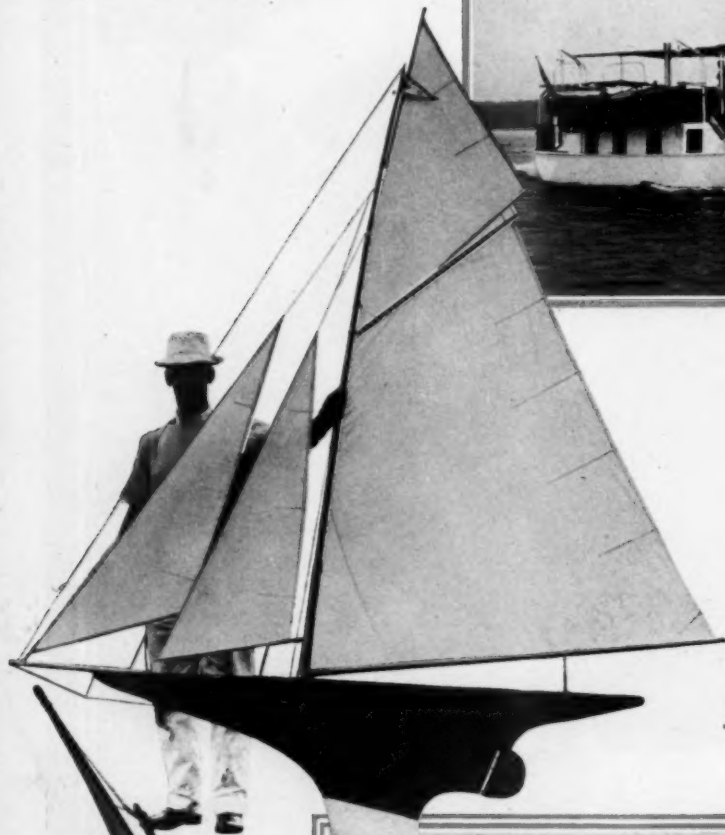
Photographs by M. Rosenbald



Not only is America mistress of the seas in motor craft, but in model yacht design and construction also. At Bayside, L. I., this past month, the British model yacht Endeavor, challenged for the model yacht Championship of the world. The American Polka Dot met her and the American boat won in three straight heats. The illustration on the left shows Polka Dot and her owner, W. T. Daniels

Boating Season Now In Full Swing

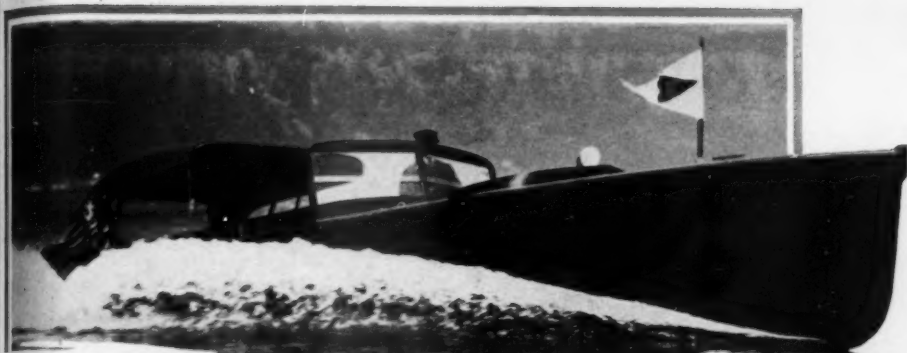
Increasing Activity Attests to the Popularity of Yachting in its Many Forms



Yachting and the sailing of catboats still holds wonderful fascination for many people. There are many who claim that there is nothing superior to the sport of holding the tiller and sheet lines of a good catboat on a day when a fresh breeze is blowing

The 110 footers powered with Standard motors which did such excellent war service are now all working in other fields. Many of them have been converted for commercial purposes; some for yachts and quite a few as public party boats. The illustration above shows one of the 110 footers used for a public fishing boat, making daily trips out of New York to the fishing banks





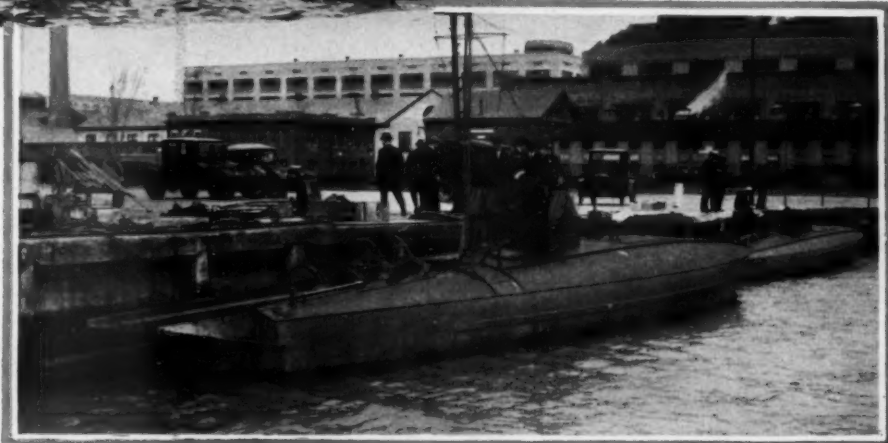
Kay, a new runabout recently built by the Consolidated Shipbuilding Corporation for William J. Ehrich. It is a 32-footer, powered with a six cylinder, 150 h.p. Speedway motor, and makes a speed of 25 miles an hour

Commodore Herbert F. L. Funke of the Manhasset Bay Yacht Club, in addition to his racing craft, keeps Alcedo, shown at the right, in commission for fishing on Great South Bay. Alcedo is a fifty footer rebuilt from a center board sloop. Her power is a four cylinder Scripps. It is hard to imagine a more suitable outfit for the purpose intended

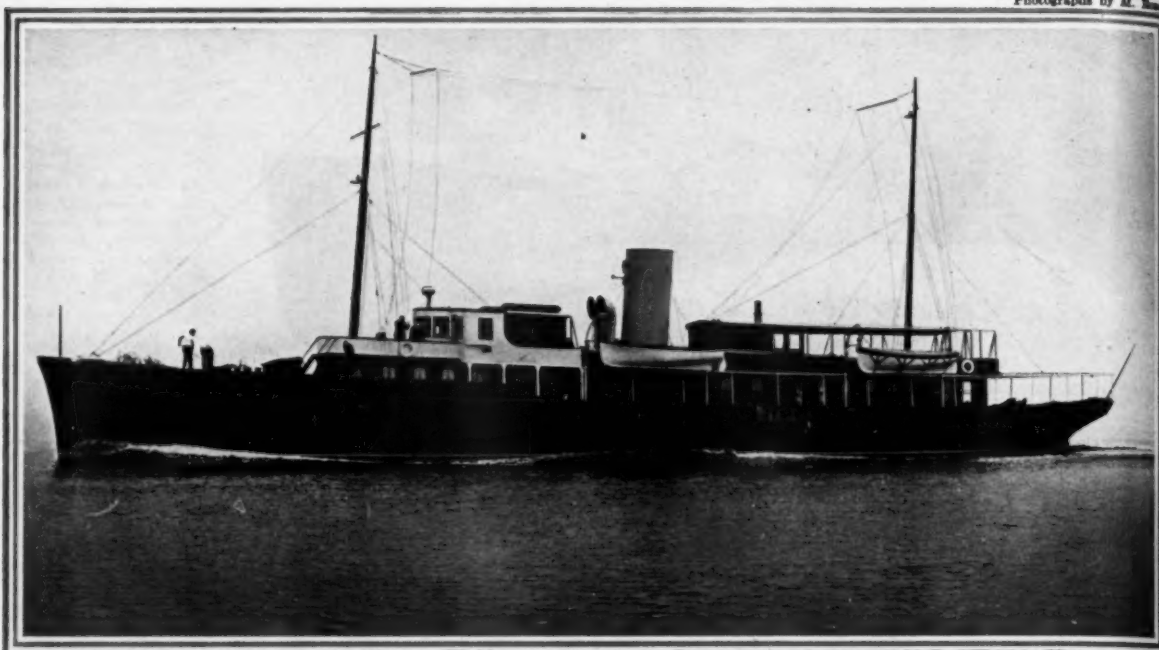


That yachting in all its branches is having a great comeback is proven by the great interest being shown this year in the six meter boats. Some thirty or more of these small ships have been completed recently and are now going through their training periods in preparation for the elimination trials to determine the American team which will meet the six meter Brits on Long Island Sound in September

The illustration at the right shows two of the Navy's new whaleback speed boats tied up at Washington after a record run from Norfolk to the Capital



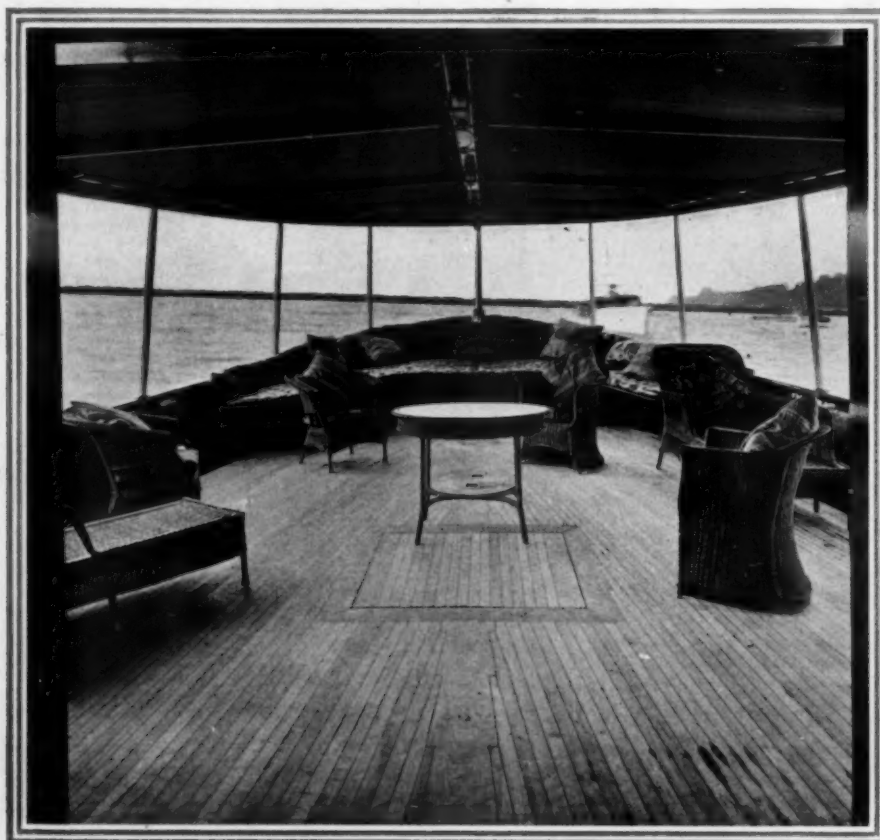
F. & A. Photo



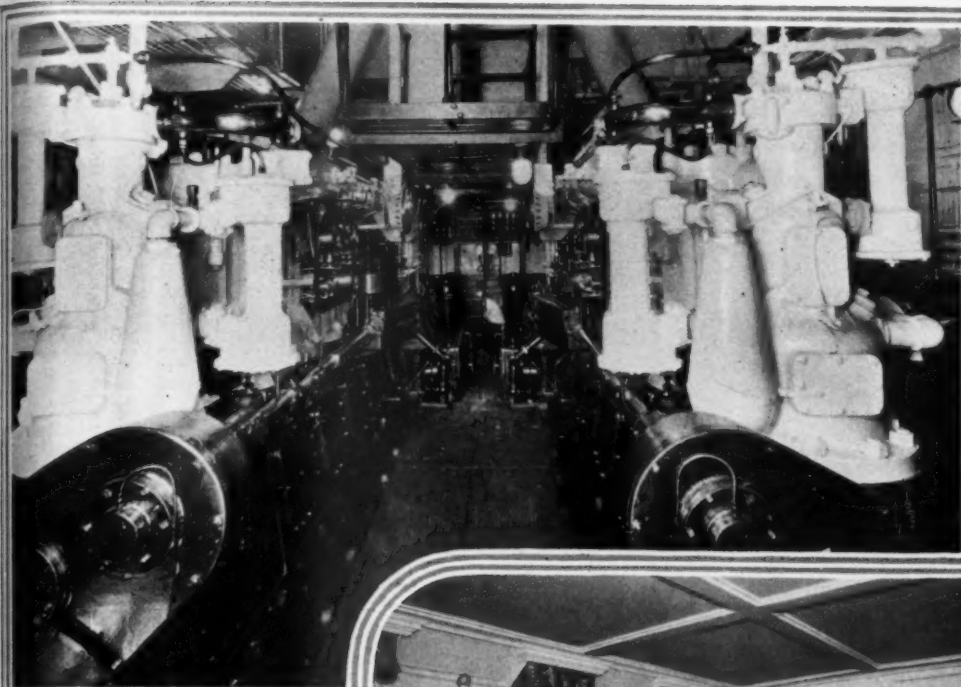
Dolphin, the largest American built Diesel powered yacht is 180-feet in length and driven by a pair of eight cylinder Winton Diesel engines of 550 h.p. each. She was built and launched at the yard of the Newport News Shipbuilding and Drydock Co. from designs and under the supervision of Cox and Stevens, Naval Architects for Mortimer L. Schiff of New York

Dolphin, the Newest Diesel Yacht

The Finest Example of American Shipbuilders Art Just Completed and Placed in Commission



The spaciousness and comfort which marks the equipment of the entire boat is evidenced by the roomy quarter deck aft. It is here that the enjoyment and ease which comes with the possession of a boat like this will be appreciated to the utmost by the fortunate owner and his guests. Dolphin will be in the care of Captain E. W. Baldwin



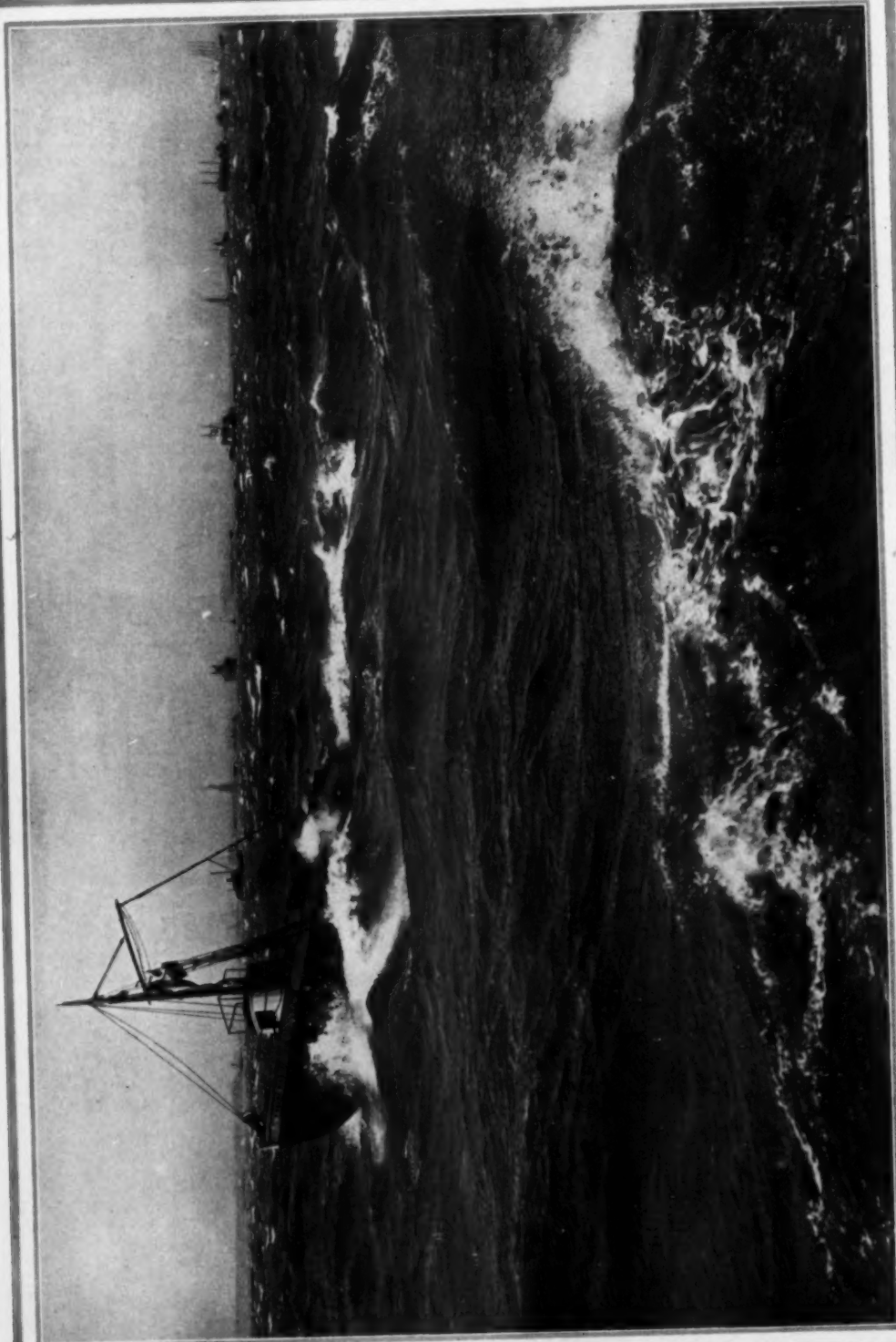
Main engines are two 550 h.p. Winton Diesel motors of the four-cycle type. Under service conditions and operating at 255 revolutions they produced a speed of 17.33 m.p.h. This is the type of power plant which is rapidly becoming the ideal installation for large yachts on account of its efficiency and ease of operation

Quarters for the owner and his family are aft of midships and separate staterooms are provided. Furnishings are most attractive and designed to harmonize in each room. All staterooms throughout are provided with a wardrobe locker lined with white cedar



The lounge on the main deck. As one sinks in the soft depths of these wonderful chairs before the fireplace with its real fire one forgets completely about being on board a boat. The spaciousness which is apparent everywhere is the result of skillful design and careful attention to detail

Photograph by E. Leick



The great flow of commerce which enters and leaves New York Harbor under the watchful gaze of the Goddess of Liberty requires many material things in the way of supplies and accessories. Many commercial motor craft need sturdy dependable powerplants to enable them to successfully deliver their cargoes to the waiting ships in all weathers. The conditions depicted in our illustration are by no means unusual. It just happens to be one of the boisterous days in the early spring when the wind and tide were at odds.

A Breezy Day on New York Bay

An Un
Pictur

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Among the Islands of the Cheneaux

An Unusual Motor Boating Expedition to the Picturesque Islands of Michigan's Far North

By Felix J. Koch

ELEANOR CORRYELL, aged exactly twelve and a month, was responsible for the trip in the first place.

Watching our futile attempts to come within range of a flock of gulls which rose and settled alternately on the rocks of the shore at Lakeside, she came very close and whispered:

"If you want pictures of birds why don't you take the put-put and go where the herons nest?"

Little Eleanor Corryell is very nearly a child of the Northern wilderness. Being so, she has learned to read the stranger by intuition and to know when to fear the newcomer and when not to be afraid. She caught the quick flash of interest on our face, and so, in her simple, happy way, went on:

"There aren't many people go to the heronry; it's too far. When folks go they generally go to Cedarville on the way back, and last time anyone made the trip it cost \$3.50 just for gas."

Dear little Eleanor Corryell,—three dollars and a half represented many days' wages with her and hers.

"And when you get there . . . ?" we asked, wondering. The heron is very nearly extinct, even in the farthest Michigan wildernesses, thanks to insatiate aigrette hunters, pursuing the mother bird just when she must attend her fledglings, that they may kill her for her



Uncle McBane was proud to display his catch and share it with the grocer



Ralph tied up at Tanners' wharf and led us to the boathouse

plumes, which still are demanded in spite of all laws. "Oh, it's wonderful!" the child enthused. "Every tree on the island has its big heron nest,—they're as big as that!" and she drew a circle perhaps three feet across in the pebbles of the strand.

"It isn't far from there to where the big forest fire occurred," Eleanor speaks a remarkably perfect English, "and," seeing that we were growing eager, "you might see the place where the first Corryell settled in the archipelago and traded for furs with the Indians."

"You know," and the Scotch pride of ancestry so strong

ney to make, makes it in that way. When in Rome one does as the Romans do!

"I guess I can see to it that Uncle McBane will take you if you wish," the twelve-year-old lassie,—queen, as she knew, over the hearts of the lonely islanders,—said, with the finality of an Eastern autocrat.

True to her word, once we'd secured our photographs of the sea-gulls, Eleanor left us to attend matters with Uncle McBane. Uncle McBane, it might be explained, was the son of the proprietor of the picturesque inn on the island and lineal descendant of the intrepid frontiersman who had

with the habitants of the Cheneaux flashed in her eyes, "he was Great-great-grand-father!"

"And the put-put, Eleanor?" we asked.

Travel among the remoter islands of the Cheneaux, the last vestiges of land until one has crossed the Northern seas and reached the desolate Northern Peninsula, is by motor-boat almost alone. One can go by skiff and in certain cases by canoes, but should a storm overtake the voyageur he might have a sorry time of it breasting the squall.

What is more, no one who has a real jour-

homesteaded much of the remoter parts of the Cheneaux archipelago.

He had just come in from a fishing excursion in his own put-put, as folk call the motor-boats up here, and, well pleased with his luck, was sharing the catch with the skipper of a motor-boat store,—a floating grocery which is the only link with the food supplies of the world for the isolate islanders, bringing them what they may order and carrying other wares, from which they may pick, on its trips, every so often, out of Cedarville, the islands' metropolis.

The sturdy young islander was a camera-lover also and the evening before, at the motor-boat wharf, we had hit on congenial themes. We had promised to show him a few tricks with the lens and evidently he believed that today might be as good a time as any other day of our stay.

"Of course I'll take him, Eleanor," he said. Then he looked toward the forest where a trail led to a bit of a cottage at the turn of the beach.

"Only, of course, he'll not object if we take a friend along!"

The more the merrier on a trip such as this; we were in his hands for the time.

He arranged the route, according. We would follow the shore of Corryell Island to its uppermost end. Then we would take the channel dividing it from Government Island, where Uncle Sam had at one

certain parts of the engine himself and, incidentally, tumbled his oil can in the water; and in less time than we'd dared to suppose we were off.

A sturdy skiff with a motor device exposed in the one end,—one of the newer propelling devices very popular in the archipelago,—shot past us; the owner shouting greetings, as is the invariable custom in the Snows. Riding the bits of swell left by its passage, two boys in a skiff halloed, as well; exhibiting results of their morning's line fishing. The one lad seized the bit of tri-colored cap from his head and waved it merrily as we aimed the camera; then our own motor-craft made a sharp veer to the north and in a moment they, too, were gone behind a sharp point.

Almost immediately we were riding the wilderness channels. Across the strait, Government Island loomed, a mass of deep, dull green and black; forest almost alone. An Indian or two squatted on the shore of the Naval timber reserve; that is as far as Man dared or cared to go. The tracks of the Government loggers, when they came, at rare intervals, could be seen breaking the forest evenness; otherwise Nature held primal dominion there.

"Call me Ralph," young McBane interjected, apropos of nothing, as he tossed his sweater on the rail. "You know Gus already," he con-

*The
grocer's
boy*



*Polly snapshots
the great
basketfuls of
edibles being
brought ashore*

*Ralph made
the tether of
the boat
tighter still*



time obtained the timber for ships. This would bring us into Hill's Channel and between Island Number VIII and Hill's Island; after which we would make a long detour to Cedarville and then Arlington and so home.

The sun was climbing a cloudless sky; the very Lake seemed calling.

"We might as well be off at once," our host said, with the same nonchalance with which he might have suggested a canoe-trip to the next island. "Eleanor, tell Grandma we won't be back 'till late."

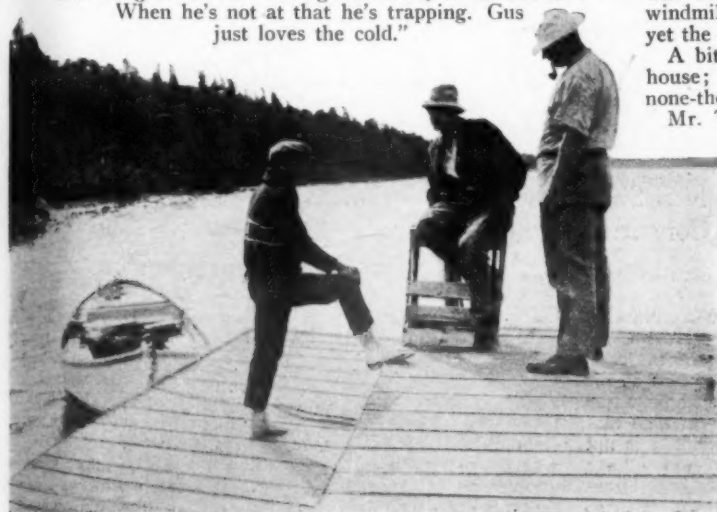
He sent the child for his camera; looked carefully to his whistle, . . .

"There's apt to come fog up there!" he explained; set Gus, the Man Friday of the beach, to filling the gasoline tank,—a gallon and a half per mile travelled they reckoned, to make assurance doubly certain;—attended the oiling of



The pet seagull was quite tame and came to be fed

timed, by way of making conversation. "It's Gus who looks after most of the boats up here in the winter. When he's not doing that he's building furniture, rustic work. When he's not at that he's trapping. Gus just loves the cold."



Stopping at one of the picturesque landings on the lake

Behind us some cork life-preservers rattled merrily in unison with the thrum of the engine. Ralph put on the sweater as suddenly as he'd dropped it; then made ready to land.

"We Islanders are proud of our put-puts and we like to make our boat-houses attractive," he suggested, in explanation of the landing. "This man,—Tanner's his name,—has all the rest of us beat."

Without so much as by-your-leave, Ralph tied up at the Tanner wharf and led us to, then into the motorboat house. The structure was, indeed, one of the most attractive we have met with anywhere. Built of imperishable cedar, left unpainted, and of a size to accommodate the largest motor-boat necessary in the archipelago, the house was given touches of

grill-work, made of pine and cedar and sometimes birch saplings, their bark about them, or of strips of the gray birch-bark in turn. The effect was such as to make one think of Swiss chalets and then of cottages tucked off in the remoter Tyrolean Alps.

Inside, the walls at right and left were flanked with what appeared to be divans. Actually, these were boxes for concealing endless motor-boat supplies. Over the benches, as Ralph called them, there were shelves of the rough hewn native woods, from the surrounding forests; every shelf, in turn, was pleasantly crowded with curios gathered in these wilds.

Even the rear wall of the Sans Souci, as Mr. Tanner called the boat-house, was unusual. It was faced with doors, opening into closets with other motor-boat equipment. The inner sides of these doors bore shelves, their fronts cupped, to keep things from falling; these shelves held tinier, more fragile, parts and tools.

Beyond the boat-house was the pumping station supplying the water to the faucets, which were far more convenient to the engineer of the motor-vessel, than hauling his supply of water from the lake would often be. Lake water, in the Cheneaux, it

must be recalled, is often covered with leaves, pine needles, bits of brush, dead fish and the like. This pumping station was of shingles and built in the shape of a Dutch windmill,—only, there were none of the blades, nor yet the sails, due with such mills.

A bit further down strand was the man's gasoline house; fireproof, but covered with native planking none-the-less.

Mr. Tanner, one of two brothers drifting to this part of the world from Long Beach, California, came to greet us. Ralph made the introductions, then went on to explain:

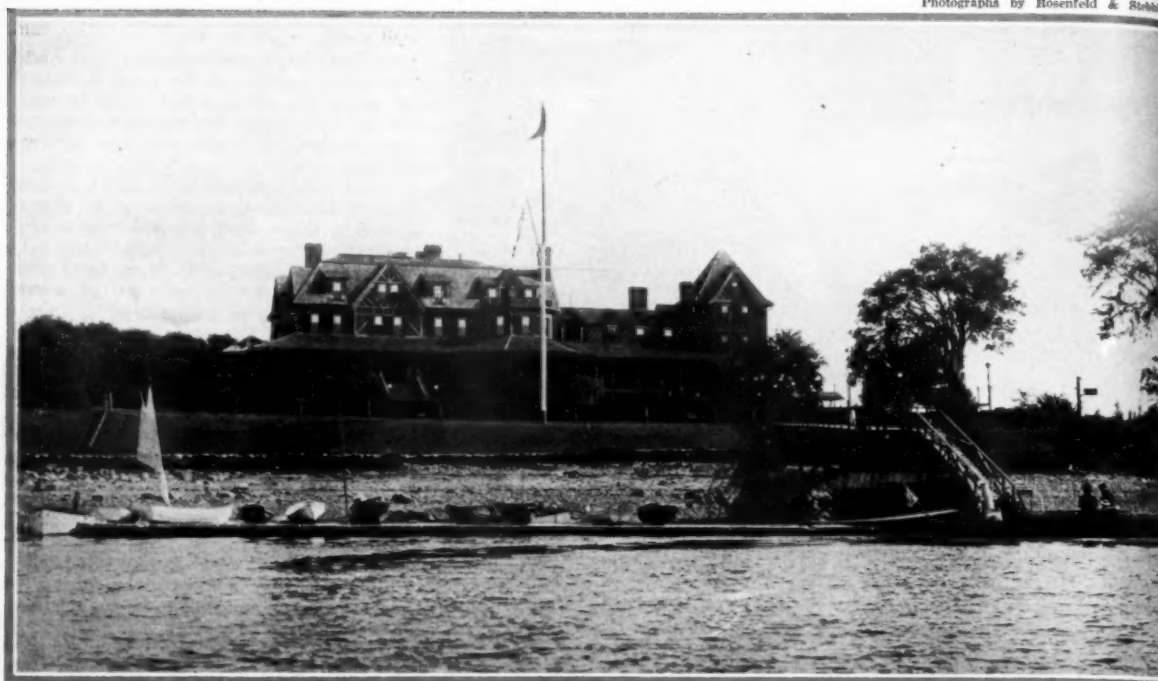
"You just ought to see Mr. Tanner's home here! There's just him and his brother," and with but the slightest glance for permission from Tanner, our mentor led us inside.

Even had it not been so picturesque, the place would have been interesting, as being typical of the dwellings of the scattered

(Continued on page 82)



Lunch was brought along for the trip



The Eastern Yacht Club of Marblehead

Yacht Clubs Which Make Better Boating Possible

Provisions Which Should Be Given Attention in the Constitution and By-Laws

(Continued from May and June MoToR BOATING)

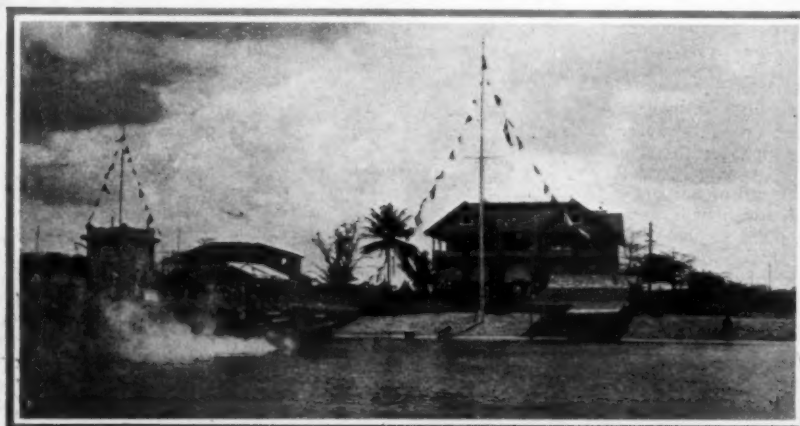
WHILE it is the usual practice for the Nominating Committee, which is either appointed by the Commodore or elected at an open meeting of the club, to nominate the candidates for officers to be elected at the Annual Meeting, yet it is very important that an alternative method be provided by the constitution or by-laws so that in case the ticket or any individual nominee thereon is not acceptable to any group of members, that they may have the privilege of nominating their own candidates. However, the constitution should provide that the candidates so nominated represent more than the individual opinion or choice of one, or two members. In other words, unless the candidates are assured of a representative number of votes at the Annual Meeting, their names should not be allowed to go upon the official ballot. This may be accomplished by a provision that "Any twenty members may

nominate any member for any office, provided such nomination be made in writing, signed by at least twenty members and forwarded to the Secretary at least fifteen days before the date of election." The Secretary should always post the names of the nominees on the club bulletin board, as well as send a list of them to every member of the club in his notice of the Annual Meeting.

It is very good form to provide that no proxies shall be allowed at an Annual Meeting. It is also well to specify that no other member shall be eligible for election unless

he has been duly nominated according to the prescribed rules.

Every member of a club has equal rights in the property and privileges of the club unless otherwise specified in the constitution or by-laws. These rights cease with the termination of his membership. Generally, voting power is only vested in active or resident members and is denied to



The Habana Yacht Club of Havana, Cuba

associate non-resident and honorary members.

As previously stated, the Board of Governors generally have power to suspend or expel a member whose conduct shall have been considered to have endangered the welfare or interests of the club. However, a member always should have the right to appear before the Board of Governors and be heard in his own behalf. At least ten days' notice in writing should be given the member by the Secretary of the club, stating the time and place where the charges will be heard, and a copy of the charges should be forwarded to the member. Very often the ruling of the Board of Governors may be appealed from and the member given the privilege to appear at a regular or special meeting of the club and be heard. The rulings of the Board of Governors should only be reversed upon a two-thirds majority of the members present at the meeting.

The practice of regular meetings of the yacht clubs varies considerably.

The new home of the Knickerbocker Yacht Club at Port Washington, Long Island



The Corinthian Yacht Club of Marblehead

Many clubs hold meetings at least once a month; others every two months; some, quarterly; some, semi-annually, and many, only once a year. As a rule, it is the best practice not to hold meetings too frequently. Generally, six meetings a year is plenty, and very often quarterly meetings tend toward more efficient operation of a club than more frequent meetings. After all has been said, it is the officers and committees who have been elected by the members, who are entrusted with the responsibility of conducting the club's affairs. Too much interference by club members into the duties of the officers and committees is very bad. If the officers or committees do not prove capable or are irresponsible, they should either fail of re-election at the Annual Meeting, or be removed for cause. As a rule, general meetings of the club are simply for the purpose of hearing the reports of officers or committees, or for acting on some one or few specific and

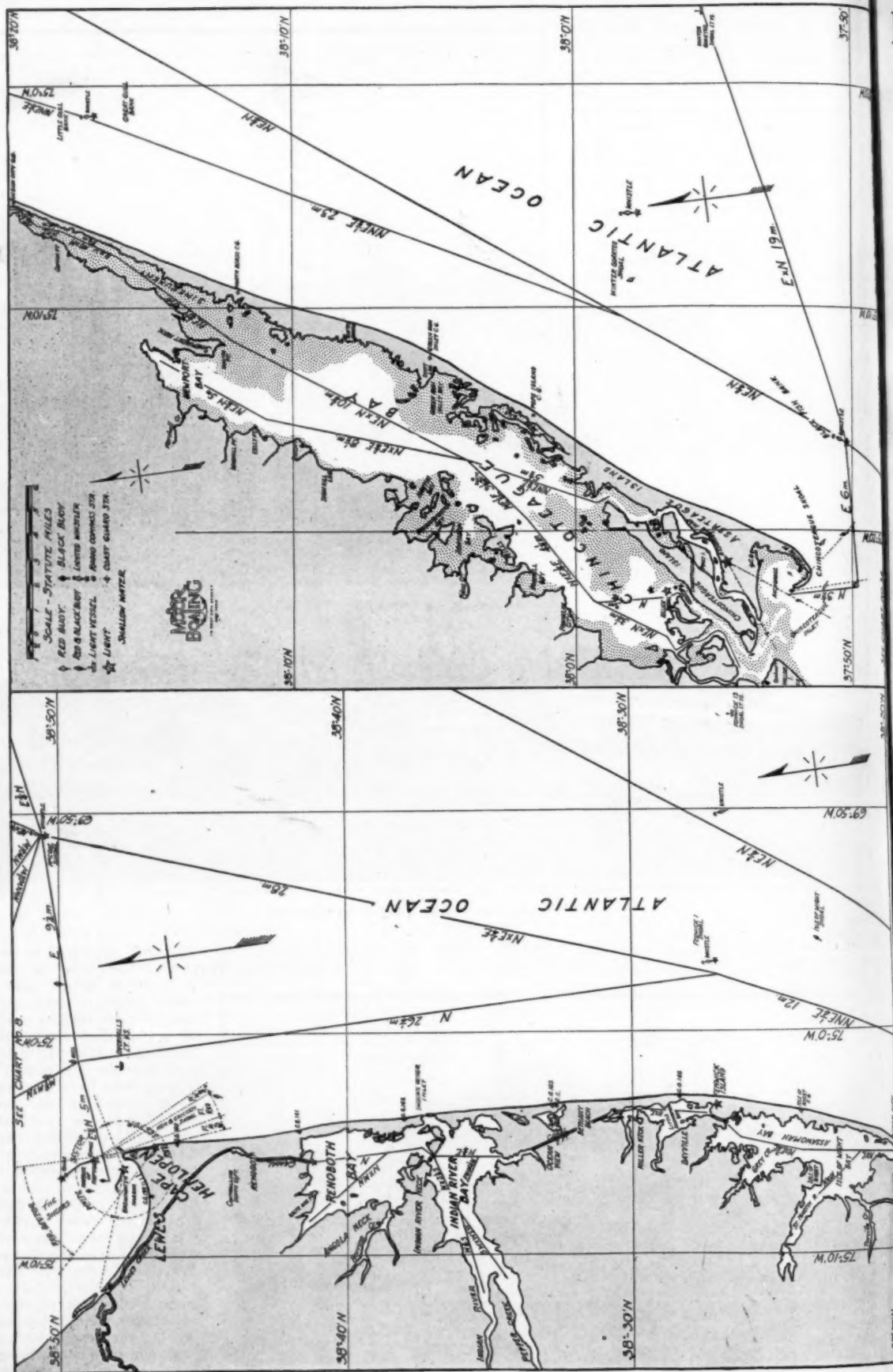


The Marblehead Station of the Boston Yacht Club

(Continued on page 108)

Motor Boatmen's Chart No. 33—Delaware Coast, Cape Henlopen to Chincoteague Inlet

For Use in Connection With Coast and Geodetic Survey Charts Nos. 1219, 1220, 1221



How the Radio Compass Aids the Mariner

Determining the Position of a Vessel at Sea in Fog or Rain is Simplified by Newest Scientific Application of Radio

By W. Mack Angas

Lieutenant, Corps of Civil Engineers, U. S. N.

HERE and there along the coast near the entrances to our most important harbors or where shoals and other dangers make it especially important that ships be able to determine their position at all times and in all weathers, will be found a new aid to navigation, the Naval radio compass stations. The stations are often, but not always, located on the property of a conveniently situated Coast Guard station and are indicated on charts as a little black circle with a black dot in the center and the letters R.C. alongside. Although the radio compass can be used only by vessels equipped with radio apparatus capable of sending on the usual commercial wave length of 800 meters, it is nevertheless of interest to all motorboatmen who keep in touch with the most recent developments of the art of navigation, and as simple radio equipment becomes more common on medium sized motor cruisers, and it is becoming more common each season, the



Calibrating the Cape Henlopen compass station by means of a transit and simultaneous bearings with radio compass to determine its error over its entire range

the navigator of a vessel lost in a fog. Two radio compass stations can, however, do much more than give the mere bearing of a fixed point, for, by taking bearings on the vessel simultaneously, they can give two bearings and enable the navigator to locate himself by the method of cross bearings. A group of three radio compass stations can give three bearings which should intersect at a point or should form a very small triangle, the center of which is the most probable position of the vessel. The size of the triangle formed by the three bearings is a good indication of their accuracy, the smaller the triangle the more accurate the bearings, so that the three stations not only give data from which the position of a ship may be found, but they also give data for checking the accuracy of the position.

The radio compass proper consists of an ordinary radio receiving apparatus with the exception of the antenna, or aerial, as it used to be called, which is of a special type. The antenna is not suspended from the masts in the usual way, but is wound into the form of a helix and is mounted on a vertical shaft so that the axis of the helix may be turned to

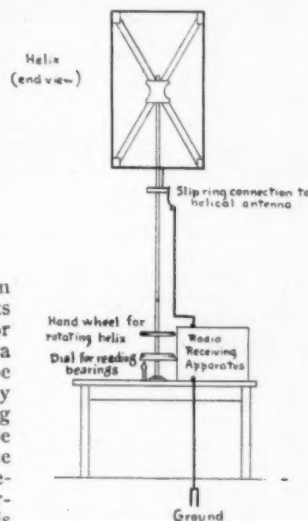


The receiving apparatus is on the table in front of the operator, while the shaft carrying the helix and hand wheel is at the operator's left. The dial for reading bearings is prominent

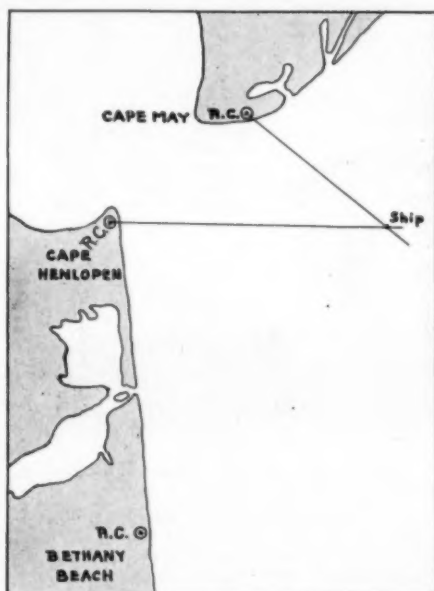
Naval radio compass stations may be of much practical assistance to motorboatmen trying to make port in a fog, rain or snow. The stations, as their name indicates, are operated by the Navy, and at present no charge is made for the services rendered by them. Their function is that of enabling vessels to determine their position when near a harbor or in dangerous waters when the usual aids to navigation cannot be seen.

The term radio compass is perhaps a trifle misleading, for the instrument might be more accurately called a radio direction finder, by means of which the bearing of a vessel sending out a radio signal may be found. In other words, the instrument determines the direction from which a radio signal is coming. A single shore station equipped with such an instrument can tell the true bearing of a vessel when requested to do so, and this information, the true bearing of a fixed point ashore, may be of great help to

point in any direction. When the axis of the helix points directly toward a ship or radio station sending out a signal, the signal cannot be heard, or can be heard only very faintly. The bearing of the sending station can be found by listening to the signal and then slowly revolving the helix on its vertical shaft until a point is found where the signal becomes inaudible or nearly so. A suitable dial and reference mark enables the operator to then determine the direction



Simple diagram showing the arrangement of the various parts comprising the radio compass receiving installation



Position finding by means of two bearings from shore stations which locate the ship by cross bearings



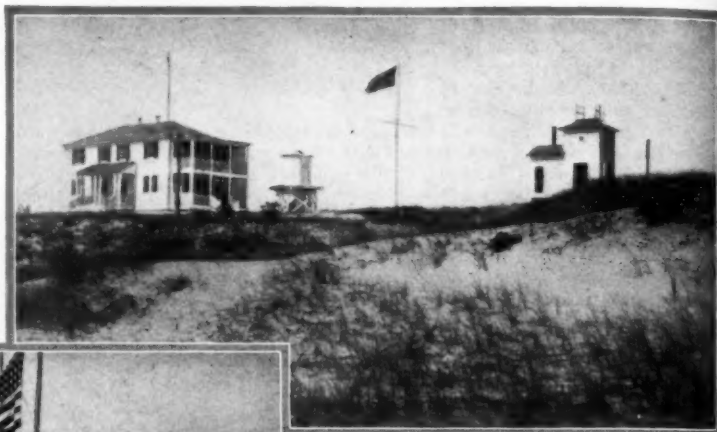
The Cape Henlopen barracks building taken from the calibration platform of the compass house. The antenna is used for talking to Cape May and Bethany Beach stations

in which the axis of the helix is pointing, and hence the bearing of the sending station. When stations are located on islands or prominent headlands, it is often impossible to tell on which side of the compass station a vessel is, but this is not such a serious matter, as it might at first appear to be, as most of the stations are so located that a vessel can only be on one side of them. It is probable also that in the near future improvements in the radio compass will remove this weakness.

A radio compass, antenna and all, is surprisingly compact and, in the most modern stations, is installed in a little rectangular building eight feet by sixteen feet. The eight by eight foot part of the building nearer the sea is two stories high, the upper story containing the helix, and the lower one the receiving apparatus, while the landward part forms a tiny single-story anteroom in which are placed the station's correspondence files, a typewriter, and a stove for heating the building. The building itself is an ordinary frame structure, except that the room containing the radio receiving apparatus is surrounded completely with bronze screen wire built into the walls, floor and ceiling and electrically connected to the bronze window screens and the screen door that separates the receiving room from the anteroom. The purpose of the screening is to intercept radio waves that might otherwise reach the wiring of the receiving instruments, with the result that the compass would not give a clearly defined minimum when the helix was pointing at the sending station. An accompanying photograph shows the interior of the Cape Henlopen Radio Compass Station. The receiving instruments can be seen on the table in front of the operator, while on his left is the vertical shaft carrying the

antenna helix with the hand wheel for turning it and the dial from which bearings are read.

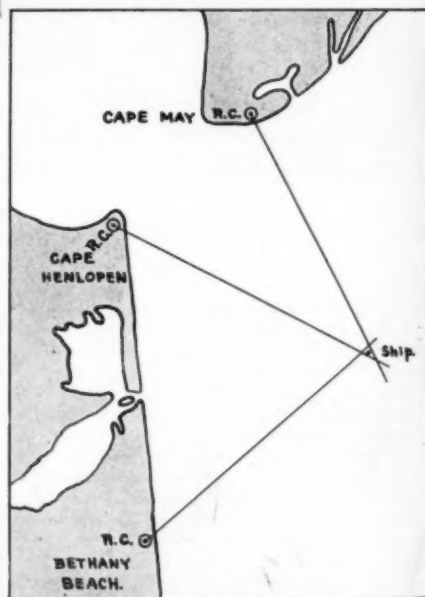
The exterior views of the station show a little railed platform on the roof directly over the helix. This is used when the station is calibrated for the purpose of determining the deviation or error of the station, for the radio compass is subject to error caused by local conditions and the error is not constant for all bearings, but varies as the direction of the sending station whose bearing is being taken changes. A photograph of Cape Henlopen Station shows the work of calibration in progress. The man on top of the station is taking bearings on a destroyer by sighting on her with an engineer's transit, while down in the radio compass room the operator takes simultaneous bearings with the radio apparatus. A complete set of these simultaneous bearings are taken, each pair differing a few degrees from the preceding one, and the entire set covering the



General view of the Cape Henlopen station and the barracks building

whole working range of the station. A comparison of the bearings taken by eye and those taken with the radio compass gives the error of the compass on each bearing. The data obtained from the calibration are used in making a correction table and curve of corrections for the station and from these a deformed compass dial is made from which corrected bearings are read directly.

(Continued on page 100)



Locating a ship by three bearings. If nearly correct, they will form a small triangle, the center of which is the probable position

The Value of Engine Auxiliaries

The Relation of the Carbureter and Magneto to the Proper Operation of the Engine

By L. Huxtable

IN concluding this series of articles which have described in detail all of the operating cycles and many details of construction of the internal combustion engine, a few words on the accessories may be in order. Largely responsible for the successful operation of the machine are the carbureter and ignition devices. The functions of these will be explained so that a clearer understanding may be had of their duties.

The carbureter is a mechanical device whose function it is to vaporize the gasoline and mix it with the proper proportions of air. The degree to which a carbureter is able to consume commercial fuels and to perform its function efficiently, measures its value as a part of the engine equipment. Gasoline must be fed to the carbureter by gravity, or pressure, and the vacuum induced by the motion of the piston draws the mixture into the cylinder.

Numerous excellent types of carbureters are in use by the several motor manufacturers. The general principles of carburetion are identical in all types, varying only in the details by which the carbureter receives the fuel, prepares it for use and delivers it to the engine. The mechanic or owner should consult the instruction book of the manufacturer for specific directions for fine adjustments on the particular carbureter used. Types are constantly changing and new models are being introduced. The number of varieties is so great that it will be useless to attempt to describe them all in a brief article.

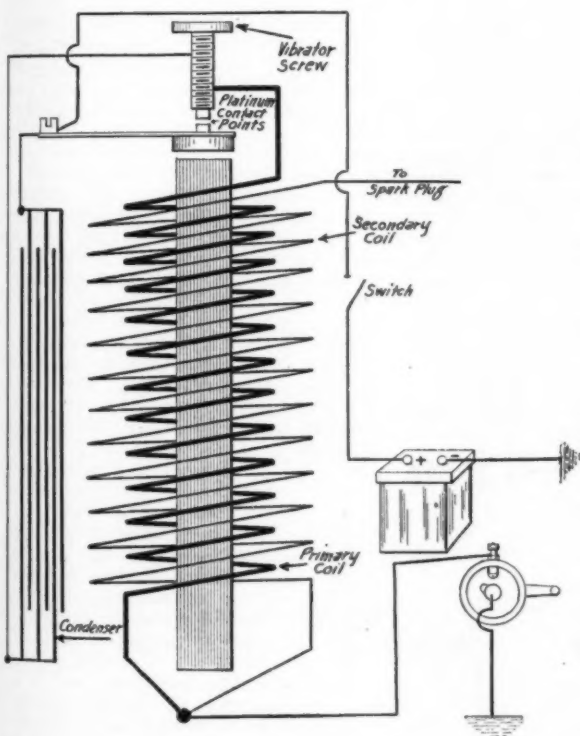


FIG. 37:—Conventional wiring diagram for battery ignition systems. The current follows from the battery through the condenser and the primary winding of the coil to the interrupter and then to the ground. The high tension current takes off from the secondary coil and leads directly to the spark plug.

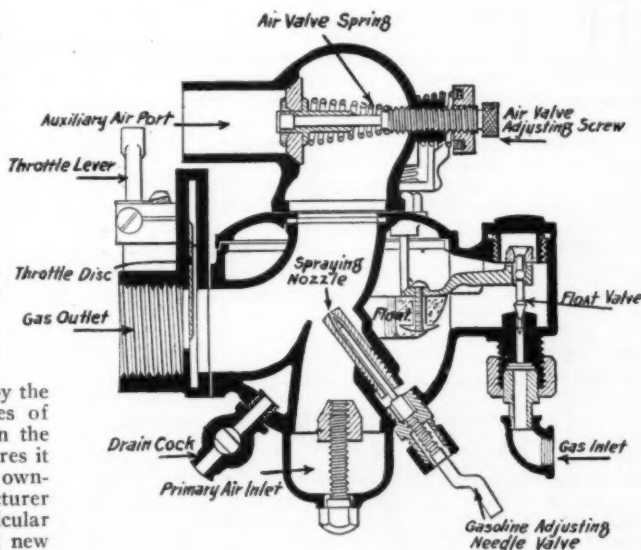


FIG. 36:—A well-known type of carbureter illustrating all the various parts in detail. Gasoline enters at the right and reaches the float chamber where it remains until drawn through the spraying nozzle and is mixed with the air stream from above on its way to the engine through the gas outlet

Perhaps one of the simplest carbureters to understand is that illustrated in Fig. 36. This is an early model of a popular make of which a great many are still rendering satisfactory service. The present-day carbureters are all constructed with a float feed, and use a spraying device to break the fuel up into minute particles. The admission of gasoline to the float chamber is controlled by the action of the float upon a needle valve. The float chamber acts as a reservoir in which a constant level of fuel is maintained. From this it is supplied to the spraying nozzle. The discharge jet of the spray nozzle is slightly higher than the level of fuel in the float chamber so that when the engine is at rest no leakage will occur. When the engine is in operation the suction of the intake stroke pulls the gasoline through the spray nozzle into the mixing chamber where it is combined with the correct proportion of air and continues on at high speed through the intake manifold and into the cylinder. The volume of mixture going through the passages to the engine is controlled by the throttle, which can be opened or closed at will.

The adjustment of a carbureter consists of regulating the supply of gasoline and air so that the combined mixture will give the best operating results under varying speed conditions. As a general rule the low speed adjustment with the spark retarded is made first in order to regulate the flow of gasoline through the needle valve. The high speed adjustment with the spark well advanced is made next by regulating the volume of air being admitted. Specific directions are necessary for each type of carbureter since each has its own individual construction for obtaining a correct mixture.

The control of the carbureter is obtained by the use of a hand-operated throttle. This throttle is sometimes a disk as shown in Fig. 36 or more frequently it takes the form of a butterfly valve in the air passage of the carbureter on the side leading to the engine. In starting on present-day fuels it is necessary to place an additional control on the carbureter which chokes the air supply and causes an excess of gasoline to be taken into the mixing chamber. In cold or damp

weather it will be necessary to use this control a great deal more than in summer weather. The excessive use of this control after the engine is heated will afford too rich a mixture which will cause irregular running and over-heating of the engine. It will also cause an excessive fuel consumption.

As the available supply of crude oil decreases and as the demand for gasoline increases the refiners lower the quality of their output. The heavier fuel which results, necessitates the installation of auxiliary devices to aid the carburetor in breaking up and vaporizing the fuel. While many changes have been made in the mechanical construction of the carburetor in order to break up the fuel some form of heating device or attachment is necessary to secure satisfactory vaporization. Among these can be mentioned: a hot air duct generally of flexible tubing to conduct hot air from the exhaust manifold to the air intake, hot water jackets which surround the intake manifold or the carburetor, or a combination intake and exhaust manifold.

Some forms of carburetor use a portion of the exhaust gas to heat the walls of the carburetor surrounding the mixing chamber. Recently there has been placed on the market an electrical heating device which is placed in the bottom of the float chamber to raise the temperature of the gasoline. In all cases the action of the heat is such as to cause the gasoline to break up into minute particles more readily than it would in a cold state.

No part of the gasoline engine has been changed more frequently than the ignition system. The original and first method for igniting the fuel in a gasoline engine was by means of a hot tube or flame. This was followed by the make and break electrical system and today almost without exception the jump spark or high tension spark plug method is used exclusively. Since the prevailing system of ignition used today is an electrical one, we will explain the principal parts of this. Naturally the discussion will have to be brief and to the point since the subject of ignition is so large that a separate volume could be prepared about it.

All ignition systems on gas engines operate by means of an electric spark which is caused to jump between the terminals of some suitable spark points within the cylinder when the compressed gas is ready for firing. We will do well to understand a little of the electrical expressions used and the way electricity can be made to serve your needs. It is difficult to explain just what electricity is, as many have tried without success. But we do know how it acts under various conditions just as we know

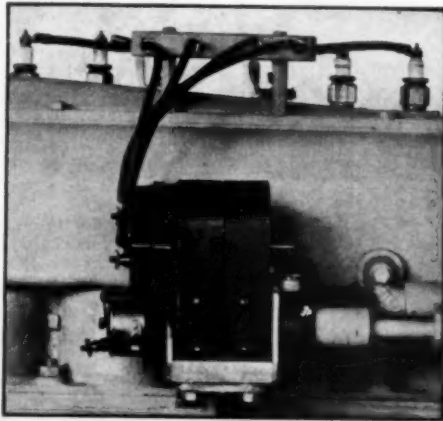


FIG. 39:—The high tension magneto generates within itself current of a proper potential which is led directly to the spark plug

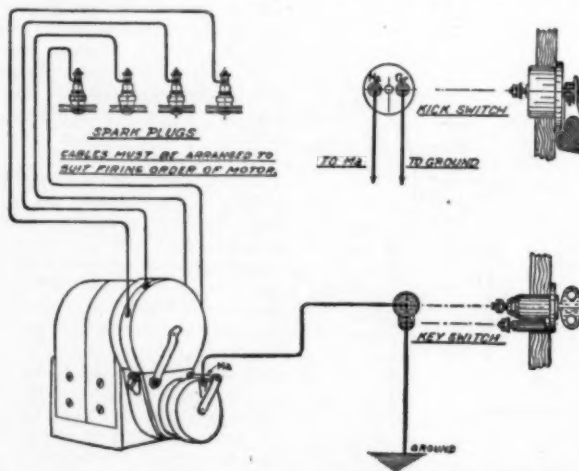


FIG. 40:—A simple wiring diagram of the magneto system. One wire to each plug and one wire to a switch and ground is all that is necessary

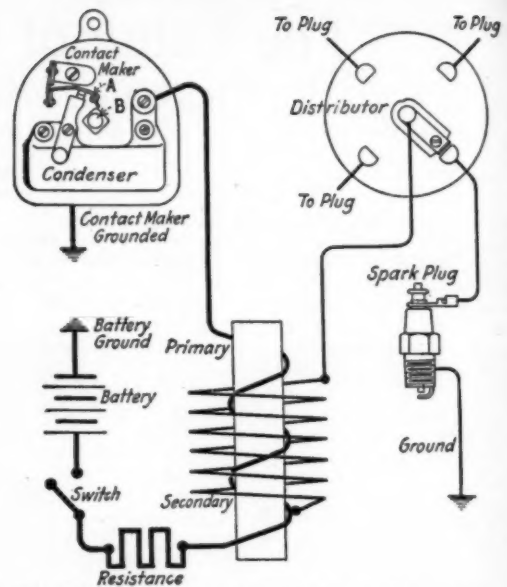
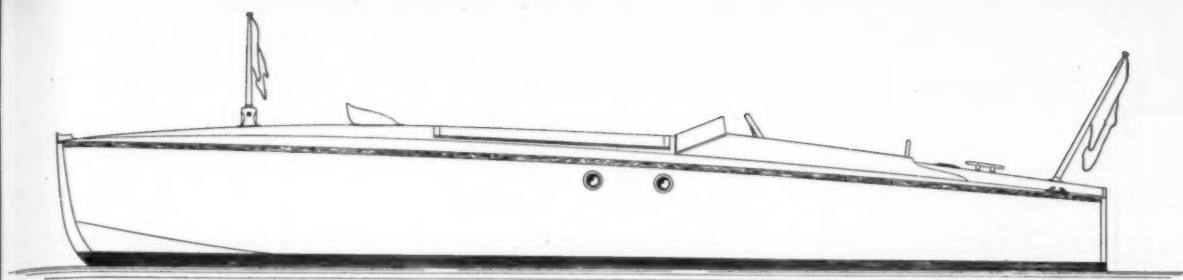


FIG. 38:—The high tension distributor type ignition system is similar to the previous one except that the high tension current is distributed in turn to each spark plug in proper rotation

that the force of gravity acts without being able to explain just why. We may say that electricity is everywhere present, but we are unable to feel it since it is not in motion. In order to get work from a current of electricity it must be flowing along a conductor in just the same way as water flowing down a stream must be in motion so that we may get power from a water wheel. Water in flowing follows a natural path from a high level to a lower one. Water can be forced to a high level from which it will flow by gravity to the lower one through pipes or along the stream. When water is pumped into the tank on top of a high building we know that there will be a certain pressure at the street level in all pipes connected to that tank. The pressure will depend upon the height of the tank and if we wish to know how much this amounts to we can measure it on a gauge in pounds per square inch. At the same time the quantity of water which can be discharged through the pipe is measurable in gallons per minute. The units designated as pound, gallons, and minutes, are familiar to everyone and an expression stating that fifty gallons of water are flowing from a one-inch pipe at a pressure of sixty pounds per square inch is perfectly clear and the volume of water represented is

readily comprehensible. Now, when we work with electrical units we have similar expressions to designate corresponding quantities. We will find that the units of electrical measurement are not expressed in terms of gallons and pounds but in other terms such as amperes, volts, and ohms. The ampere is the unit of quantity and represents the volume of current flowing through a conductor. The volt is the unit of pressure and indicates the pressure back of the flow. The ohm is the unit of resistance and is a measure of the hindrance to the flow along a conductor.

Electricity produced at one place can be readily transmitted and used at another place. It is necessary (Continued on page 110)



Outboard profile for Lorraine, the snappy 16-foot Hacker runabout

Lorraine, a Speedy 16-Foot Runabout

A Wonderful Little Speedster Designed for
Fast Comfortable Going and Easy Construction

Designed exclusively for MoToR Boating

By John L. Hacker

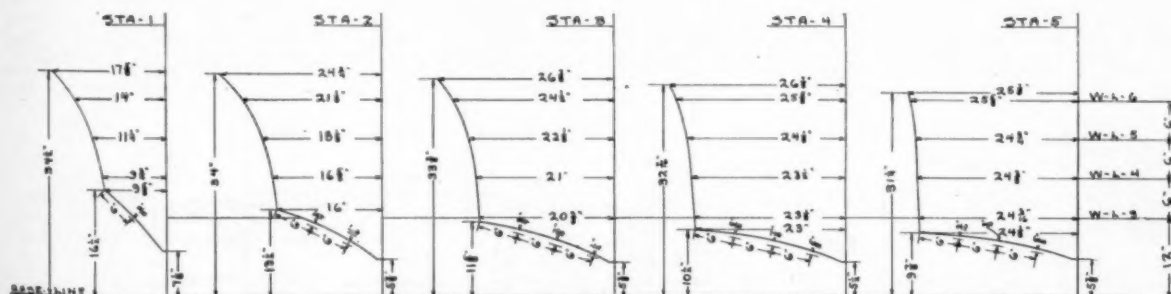
OUR little design which we publish this month is for a handy little runabout of only 16 feet in length. It has been worked up particularly to produce a fast and easily built little job and will run up to the maximum possible speed with little fuss or spray. The motor specified is the three cylinder two cycle Pierce-Budd motor and with this a speed of almost 30 m.p.h. can be attained. For those who prefer some other type of motor it may be said that any desired motor whose weight is less than 300 lbs. may be installed and will give satisfactory service. Experience has shown, however, that the Pierce-Budd motor specified will produce more miles per pound of motor than any other and best results will probably be obtained by following the designer's intentions. It has been found that the most suitable propeller for this little boat is a two blade wheel of 16-inches diameter and 22-inches pitch. The Pierce-Budd motor is able to turn this about 1,800 revolutions and at this speed lots of real fun and recreation can be had at small expense. The original of this design has been based on the famous little 16-footer Ugly Duckling. This boat has established a wonderful reputation for speed and reliability and in patterning this boat after such a renowned ancestor Mr. Hacker has produced something which will excel its forerunner if this is possible.

The building of this boat, while an operation calling for considerable care and skill is not so difficult but that it may be undertaken by the average amateur builder. It will require attention to detail and a close study of the drawings. The mold sections and lines should be reproduced in their full size on drawing paper to give the patterns from which the work is laid out. Molds are prepared from these patterns and then assembled to the correct height above the established base line and at the proper stationing along it.

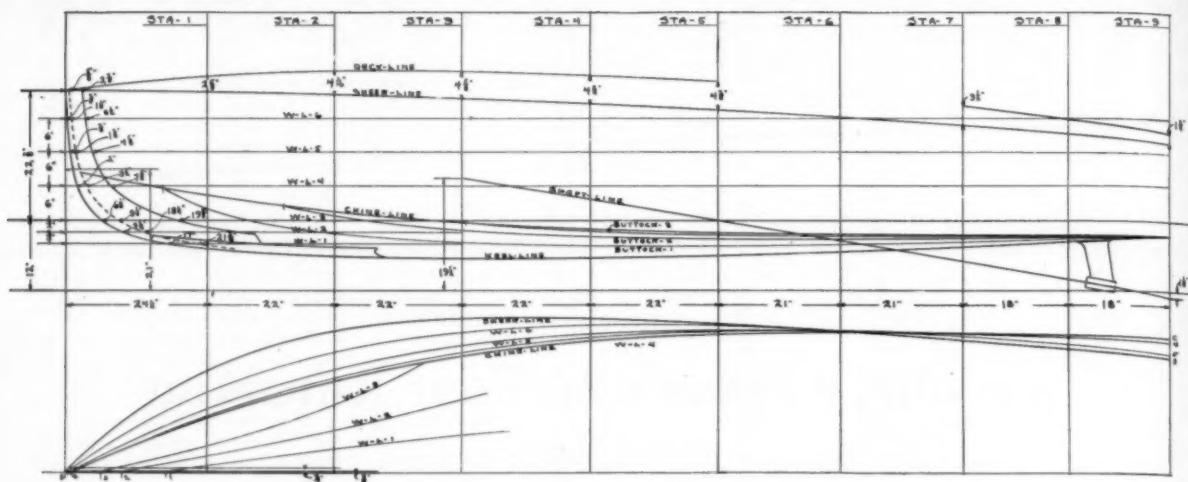
It will be well to establish for the base line a long plank of suitable size and set perfectly level and true. The keel member is laid on top of this and so adjusted that it will be at the specified heights above the base. The molds are then erected and securely stayed in place while the stem and transom are also prepared and fastened properly. As has been explained many times before the planking can be applied by starting at the keel and planking the hull to the chine. From here it is again planked to the sheer line after which much of the finishing can be started.

Decking, bulkheads, seats, motor foundations, and all the other parts are installed one after another until the boat assumes its completed appearance. Naturally a little boat of this type will be very sensitive to changes in the trim and balance. It is recommended that abnormally heavy motors be avoided and that no radical departures from the design be made. We have received many letters requesting information on changing the length of some of the previous boats in this series by a few feet leaving the rest of the design as originally intended. In all such cases we have been compelled to advise that the design as prepared by Mr. Hacker is complete for that style and type boat and anyone wishing a larger or smaller one should wait patiently until a design appears which more nearly suits his particular desires.

The specifications which follow cover every item of construction and finish and should be followed carefully in order to produce a complete job. Many of the fittings which are specified for this little boat can be obtained through some dealers who are arranging to manufacture these and any readers who desire further information in this regard can secure it by writing to Mr. Hacker at Detroit or to the Editor of MoToR Boating.



Mold sections for the frame frames of Lorraine



Complete set of lines in profile and plan for the 16-foot Hacker runabout

General Specifications

Keel: To be of $1\frac{1}{2}$ by $3\frac{3}{4}$ -inch white oak or yellow pine. It is to be in a single length properly beveled and rabbeted to suit the planking. Align for the shaft and bore $\frac{1}{4}$ -inch larger than propeller shaft to be used.

Stem and Knee: Stem is preferably to be of a $1\frac{1}{2}$ -inch hackmatack knee. If this cannot be obtained white oak may be used which is to have a knee back of it. It is to be sawn to proper shape and beveled and rabbeted to suit the planking, and through bolted to the keel with three $\frac{5}{16}$ -inch bolts and the rabbeting finished.

Transom: Transom will be of $\frac{3}{4}$ -inch manogany to be sawn to proper shape, and to have a 1 by $1\frac{3}{4}$ -inch post extending up to the tiller opening. There will be a further post on each side, 1 by $1\frac{3}{4}$ -inches extending to the deck. It is to have a $\frac{3}{4}$ -inch oak cleat on the sides, bottom, and top. It is to be screw fastened and wood plugged. Fasten transom to the keel with a knee screwed on each side, preferably of hackmatack.

Frames: Frames to be preferably of $\frac{3}{4}$ -inch hackmatack. Otherwise to consist of a side and lower member which are to be halved at the chine, and then fastened to an oak floor, all of such sizes as are indicated on the plan. If hackmatack cannot be procured white ash may be used for the frames instead. The frames beginning with No. 6 to have a bottom member in one piece extending from chine to chine. This is to be of 1-inch stock and shaped down to $\frac{3}{4}$ -inches beginning at a point approximately 3 inches outside of the stringer. The frames when completed are to be through bolted to the keel with $\frac{5}{16}$ -inch galvanized bolts up to Station No. 3 and with two fastenings of $\frac{1}{4}$ -inch galvanized bolts through to the rabbet to the stern. There will be an intermediate frame of $\frac{1}{2}$ - by 1-inch white oak extending from the keel to the deck, and to be tied across the keel with an oak floor. Fill out the spaces in between the battens, and at the chine with pine or spruce and rivet fasten to the battens.

Engine Stringers and Bed: Stringer is to be shaped from $1\frac{1}{2}$ -inch spruce. It is to be notched in over the frames and to be through bolted with $\frac{1}{4}$ -inch galvanized bolts. It is to have a filler on each side to make the floor

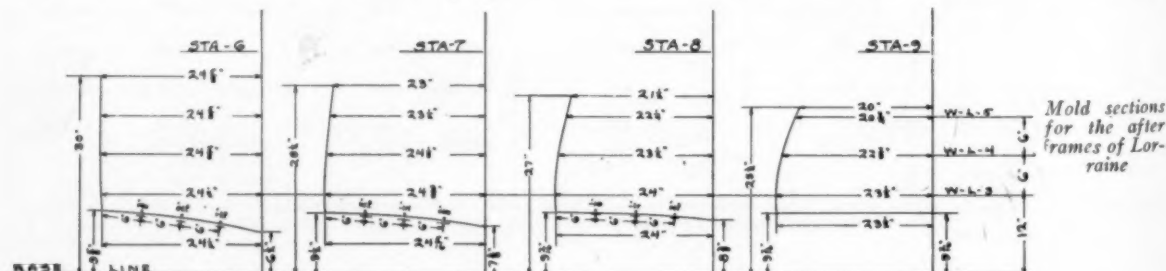
level and to support stringers between stations No. 3 and 5. The top of stringer is to form the floor level. Engine bed will be of 2-inch white ash. It is to be let in over frames and floors and through bolted to the stringers with $\frac{1}{4}$ -inch galvanized bolts. It will be properly aligned to suit the motor installed.

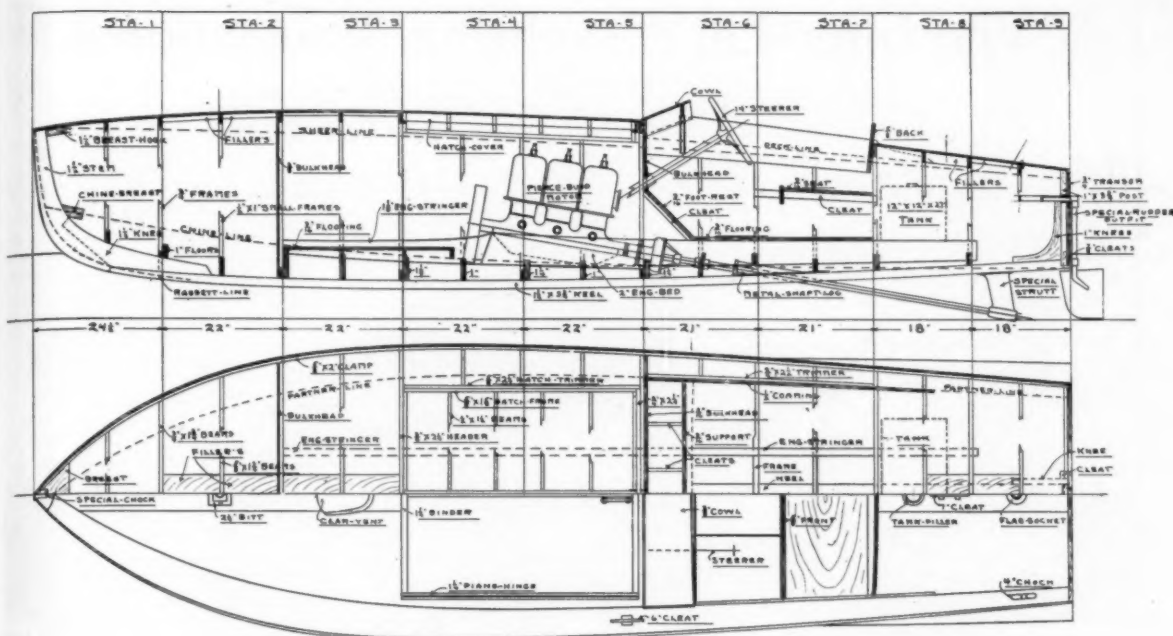
Chines: These will be shaped from $1\frac{5}{8}$ - by $1\frac{7}{8}$ -inch yellow pine. They are to be properly beveled and rabbeted to suit the planking. They are to be tapered slightly toward the stem, then let into the frames and through fastened with $\frac{1}{4}$ -inch copper rod over burrs. It is to be reinforced at the stem with an oak breast-hook and with a substantial knee on each side at the stern. Rabbet to be cut for $\frac{3}{8}$ -inch planking on the sides and $\frac{7}{16}$ -inch on the bottom.

Clamps and Battens: Clamp to be of $\frac{5}{8}$ -inch by 2-inch yellow pine. It is to be let into frames and securely screw fastened. It is to have an oak breast-hook at the stem and a knee on each side of the stern. Battens will be of $\frac{1}{2}$ - by $1\frac{1}{2}$ -inch clear spruce or fir on the sides and $\frac{5}{8}$ - by $1\frac{1}{2}$ -inch yellow pine on the bottom. These are to be let into the frames and securely screw fastened to same. Battens on the sides are to be evenly spaced while on the bottom they are to be spaced so that the outside batten will end in the chine.

Deck-Beams and Framing: Main deck-beams are to be of $\frac{3}{4}$ - by $1\frac{3}{4}$ -inch white wood. The intermediates of $\frac{5}{8}$ - by $1\frac{3}{4}$ -inch. Main beams are to be checked into frames supported with a knee, and screw fastened. Intermediates to be fastened to the clamp and supported with a knee which shall extend to the second batten. Hatch trimmers to be of $\frac{5}{8}$ - by $1\frac{5}{8}$ -inch. Header beams on stations Nos. 3 and 5 to be of $\frac{3}{4}$ - by $2\frac{1}{4}$ -inch and to have a cleat fastened to the same for hatch rest. Cockpit trimmer is to be of $\frac{3}{4}$ - by $2\frac{1}{2}$ -inches, all to be of white wood.

Frame in General: Entire frames are to be neatly trimmed and faired in readiness for the planking. All joints made as the work progresses to be white leaded or oiled. All fastenings as mentioned to be galvanized except where otherwise specified. If exposed, the heads are to be coated with lead paint and the holes wood plugged. Copper fastenings over burrs and bronze bolts may be used if desired. Insert a bulkhead panel on station No. 2 if desired





Construction drawings in section and plan with a half-deck plan

of plywood or of two thicknesses of 3/16-inch white pine with canvas between laid in marine glue and closely copper tacked.

Planking: Planking is to be of clear white cedar or Port Orford cedar. It is to be in as long lengths as practical. It is to be spiled so that the seams will meet the centers of the battens. It is to be 3/8-inches on the sides and 7/16-inches on the bottom. Screw fastenings are to be used in frames, copper rivets through the small frames and copper clinched nailed or riveted to the battens. A caulking seam of about 3/32-inches to be allowed on the bottom and chine seam on the sides. The balance of the sides is to be blind caulked by making a groove in each plank in the center and inserting a strand of soft seine twine. Butts in the planking if necessary, will be made on oak butt blocks. All fastenings are to be counterbored and wood plugged with 3/8-inch plugs. Counterbore with Forstner bit. The butts to have at least 6 fastenings on each side and screws to be 1-inch No. 8 galvanized or brass.

Decking: Covering boards and center plank to be of 5/16-inch mahogany. Balance of deck to be of white pine. It is to be laid in strips approximately 7 inches wide and is to be fastened to the beams and 3/4- by 1 3/8-inch battens notched into the beams, all screw fastened. The same will apply to the partner which is to have a closed seam. All to be flush fastened using 3/4-inch No. 7 brass screws into the beams, 3/4-inch screws into the partner, and copper clinch nails through the battens. Hatch cover is to have a frame of 5/8- by 1 3/8-inch white wood, small beams to be of 1/2- by 1 1/2-inch, covered in the same manner as the decking.

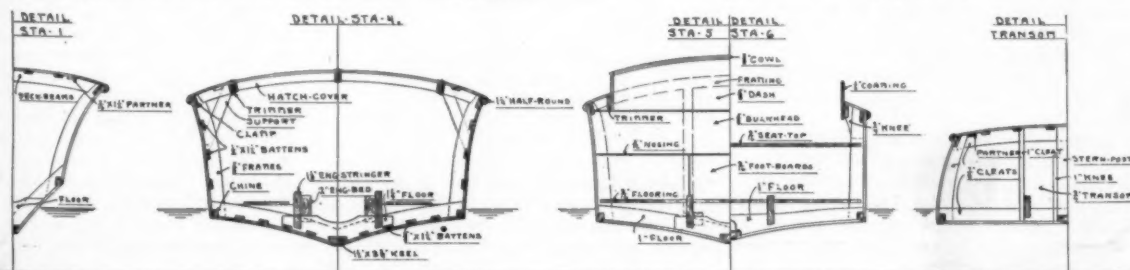
Cockpit: Cockpit is to have a coaming of 1/2-inch and a bulkhead of 9/16-inch having a top member extending from side to side, supported with a 3/4-inch cleat in alignment with the stringers. It is to have a 3/8-inch cowl supported

with a 9/16-inch arch piece as per plan and to have a 1/4-inch nosing on the bottom. The back is to be of 5/8-inch. All material to be of mahogany. Foot-boards and flooring to be of 9/16-inch white pine to be cleated and finished natural. There will be a 9/16-inch seat with a 5/8-inch front which is to be supported with a post on each side in alignment with the stringers, and to rest on a cleat or riser on each side. Foot-boards to rest on a cleat fastened to bulkhead backing and stringer.

Fender: This will be of 1 1/4-inch half round oak or mahogany. To be slightly tapered toward the stem and stern, screw fastened, with holes wood plugged.

Finishing and Painting: The entire hull is to be thoroughly dressed and sanded, bottom and chine seams to be lightly caulked with spun cotton, after which a coat of hot oil should be applied up to the waterline on both the inside and outside of the hull. The seams on the bottom are to be filled with a composition of red lead mixed to a consistency of putty with Valspar. This will be followed by one coat of lead paint mixed with lead in oil and turpentine. The bottom is then to have three coats of Valspar bronze or equivalent. The sides above the waterline are to be finished natural and thoroughly sanded with No. 00 sandpaper after which four coats of Valspar should be applied. Inside of the hull from the chine up to have two coats of color or natural finish in varnish as desired. Covering boards, and center plank as well as all interior finish to be properly filled with a paste filler. It is best to do this after one coat of varnish has been applied to the pine decking. This will be followed by three additional coats of Valspar. Floor boards are to be finished in the natural or painted with two coats of color. The work is to be well sanded and prepared before applying a succeeding coat of paint or varnish.

(Continued on page 100)



Construction sections with details for Lorraine, the 16-foot Hacker runabout

The Inter-Lake Yachting Association

One of the Oldest Boating Organizations In Existence Today
Will Celebrate Its Birthday at Put-In-Bay on Lake Erie

THE Inter-Lake Yachting Association, the oldest yachting organization on the Great Lakes, will hold its annual regatta, July 16-23, at Put-in-Bay, where Commodore Perry fought and won the great naval encounter of the Great Lakes in 1813. This year the Inter-Lake activities are under the direction of its chief executive, Commodore Charles W. Kotcher, of Detroit, one of the most enthusiastic yacht and motor boat devotees of the middle west and one who has in the past done many things of great benefit to the country at large, from a boating standpoint.

While the regatta will attract the sailors and motor boat experts from Lakes Erie, Ontario, Huron and St. Clair ports; because of the traditions and age of the I. L. Y. A. the event is of more than passing interest to the yachtsmen.

Thirty-eight years ago this summer, Henry Gerlach, one of Cleveland's veteran yachtsmen invited a small party of friends to cruise with him from the Forest City to Toledo on his sloop Lulu. The object of the cruise was to attend the regatta at Toledo and to try to take away some of the honors then held by the Maumee River sailors. The late Commodore George W. Gardner, of Cleveland, was a member of the party sailing to Toledo on Lulu.

Commodore Gardner was an enthusiastic yachtsman, and during the cruise suggested that an association of all the yachting organizations on Lake Erie should be formed to promote the best interests of the sailing sport. The matter came up for further consideration at the Toledo regatta and met with favorable comment.

Commodore Gardner continued to boost the plan for an

inter-lake organization, and at a meeting held in Cleveland, Jan. 17, 1885, the Inter-Lake Yachting Association was born. The meeting was a joint conference of the Cleveland Yachting Association and the Cleveland Canoe Club. Commodore Gardner became its executive officer and J. S. Williams, its secretary.

Thirty-seven years ago, in July, 1885, the I. L. Y. A. staged its first regatta. The event was staged at Put-in-Bay because of its location with regard to the yachtsmen in Detroit, Toledo, Cleveland, Buffalo and other lake ports.

However, the organization did not maintain Put-in-Bay as a home port, but moved the regatta from port to port. Commodore Gardner remained the executive head of the I. L. Y. A. until 1893, the body having only a semi-organized existence all these years.

The year of 1893 saw a gap of one year in the I. L. Y. A.'s work, but in 1894 it was reorganized on a more substantial basis with its founder again elected Commodore. The first regatta under the new regime was conducted at Put-in-Bay in 1894, and the same port was the yachtsmen's rendezvous in 1895 and 1896. In the last named season, the I. L. Y. A. had its first competition with Lake Ontario clubs represented. Put-in-Bay continued to hold the regatta until 1909 when it was moved to Toledo. It was

returned to the Bay in 1910 and remained a fixture there until 1920, when it was transferred to Erie, Pa. Last year the yachtsmen were anxious to get back to Put-in-Bay, and this year's regatta is again at the famous harbor.

Last year the members of the I. L. Y. A. paid a fitting tribute to its founder, when a monument situated on the



Photograph by
Scheldenbrand

Commodore Charles W. Kotcher of Detroit who is one of the most enthusiastic motor boat devotees of the middle west and now head of the Interlake Yachting Association



A recent meeting of the Inter-Lake Yachting Association at the home of Commodore Kotcher was attended by delegates from many clubs

shore of the Bay was erected to the memory of Commodore George W. Gardner, on July 10. It is a modest monument to one who for more than two decades devoted the best years of his life toward the furthering of clean sportsmanship and enthusiastic competition among the yachtsmen of the Great Lakes, being fashioned of boulders and bearing a bronze tablet.

The regattas put on by the association are representative of the best in yachting. Both sail and motor boat events dot the week's calendar with something of a social nature for both the men and women every night, and other sports, such as field, track, swimming and tests of strength, to say nothing of the annual ball game for the championship of the yachting nines.

Many of the most illustrious yachtsmen of the Lake Erie district have held the post of Commodore, with a few from the Detroit river clubs having been accorded that honor. The more active men in the organization have in the last few years made possible the source of a steady income to the organization by the organization of what is known as The Yachtsmen's fund, an Ohio Corporation. This body collects money from generous yachtsmen interested in the perpetuation of the sailing and motor boat sports, a portion of the addition to the fund every year being handed to the Commodore to help defray the expenses of the organization, the remainder going into the general fund which is invested and the interest on the money added to the fund.

The Inter-Lake Yachting Association is made up of 27 clubs as follows: Detroit Yacht Club, Detroit Boat Club Yachtsmen, Edison Boat Club, Grosse Pointe Yacht Club, Country Club of Detroit, Bay View Yacht Club, West Detroit Boat Club, all of Detroit; Cleveland Yacht Club, Cleveland Boat Club, Rocky River Yacht Club, all of Cleveland; Buffalo Canoe Club, Buffalo Yacht Club; Bay City (Mich.) Yacht Club; Bay View Yacht Club, Toledo Yacht Club, Maumee River Yacht Club, Ottawa River Yacht Club, Riverside Boat Club, all of Toledo; Buckeye Lake Yacht Club, Columbus, O.; Erie Yacht Club, Erie, Pa., Loraine Power Boat Club; Monroe (Mich.) Yacht Club; Port Clinton (O.) Yacht Club; Put-in-Bay (O.) Yacht Club; Riverside Boat Club, Lakewood, O.; Sandusky (O.) Yacht Club; Vermillion (O.) Boat Club.

The present executive officers are: Commodore Chas. W. Kotcher, D. Y. C., Commodore; Commodore J. W. Koehrmann, Toledo Y. C., vice-commadore; Commodore Harry D.

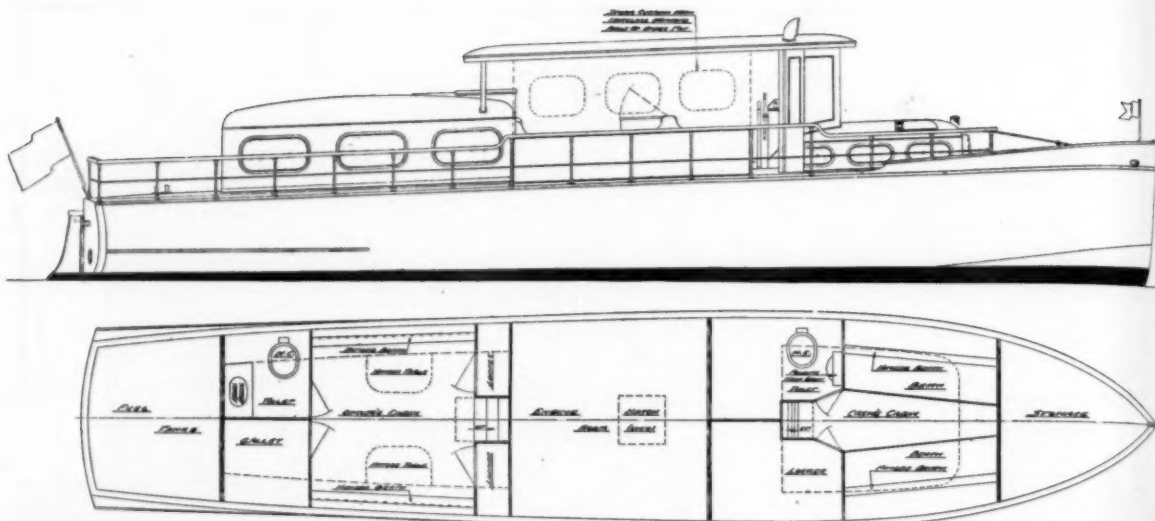
Freeman, Buckeye Lake Y. C., rear commodore; Leo J. Monahan, Detroit Y. C., secretary and treasurer; Commodore Harry Austin, Detroit Boat Club Yachtsmen, secretary and treasurer of the Yachtsmen's Fund.

Starting with the late Commodore, George W. Gardner, as the executive head of the organization from its inception up to and including the term of 1894, the list of former commodores bring back memories of some of the most active yachtsmen the Great Lakes ports have given to the game, as follows:

*John E. Gunkel, T. Y. C.....	1895
George H. Worthington, C. Y. C.....	1896
S. O. Richardson, Jr., T. Y. C.....	1897
Alex I. McLeod, D. Y. C.....	1898
George T. Bliss, E. Y. C.....	1899
Geo. F. Anderson, S. Y. C.....	1900
Wm. R. Huntington, S. Y. C.....	1901
*C. C. Warren, S. Y. C.....	1902
*Henry Tracy, T. Y. C.....	1903
John H. Smedley, D. B. C. Y.....	1904
Geo. H. Worthington, C. Y. C.....	1905
John F. Craig, T. Y. C.....	1906
Frank W. Fletcher, T. B. Y. A.....	1907
Geo. H. Worthington, C. Y. C.....	1908
S. O. Richardson, Jr., T. Y. C.....	1909
C. G. Jennings, C. C. of D.....	1910
Alexander Winton, L. Y. C.....	1911
Wm. R. Huntington, S. Y. C.....	1912
Geo. H. Worthington, C. Y. C.....	1913
Henry W. Hess, T. Y. C.....	1914
Harry C. Kendall, D. Y. C.....	1915
Emil G. Schmidt, S. Y. C.....	1916
Alexander Winton, C. Y. C.....	1917
William R. Huntington, S. Y. C.....	1918
R. George Marsh, G. P. Y. C.....	1919
F. W. Wakefield, V. B. C.....	1920
F. W. Roberts, C. Y. C.....	1921
Chas. W. Kotcher, D. Y. C.....	1922
*Deceased.	

Commodore Kotcher is a fitting yachtsman to carry on the work of the Inter-Lake and the week's activities in yachting and other sports which he and his aides have planned promise to make the coming regatta one of the most successful in the annals of yachting in the West and one which will establish a new standard for the yachting enthusiasts of the lower lakes.

(Continued on page 80)



Plan and profile of the improved Gar Jr. Flyer, a record breaking speed cruiser

The New Gar Jr. Flyer

An Improved Model of the Famous Speed Cruiser and Record Holder Now Available as a Thirty-Mile Commuter Type Boat

THE days of the large oil-burning steam yachts are numbered. Modern boat building now tends toward the faster and lighter types of craft. A real demand has been found to exist for high speed vessels capable of a sustained speed of 30 m.p.h. or more, and to satisfy this want Cox & Stevens of New York have after extensive trials and thorough investigation contracted for the exclusive sales agency of a new 50-foot twin screw commuter type day cruiser to be known popularly as Gar Jr. flyers. These boats will be patterned after the famous speed cruiser Gar Jr. II which has established all existing records for speed in boats of this type and size. Gar Wood, the owner of the earlier Gar Jr. II, is planning to build these boats so that they will be available for deliveries on short notice.

Numerous demonstrations of the Gar Jr. II in the heavy seas of the open Atlantic at speeds in excess of 30 m.p.h. have convinced the sales agents of their universally good behavior. Under way at high speed the boat will run free from vibration and spray and with little or no motion. The powerful perfectly balanced motors turning at high speed act in a fashion similar to the gyroscope and prevent abnormal motion. Under severe conditions the performance of the craft is truly remarkable.

For straight out and out speeds Gar Jr. II has established a record of 42 m.p.h. or better and the builders in guaranteeing a sustained speed of 30 m.p.h. are well within the safe limits of their guarantee.

Her motive power consists of a pair of 400 h.p. marine motors. These have been converted for marine service in the shops of Gar Wood and are practically automatic in their operation, easily controlled and always reliable. Gar Jr. II during her two years of racing and long distance high speed cruising has had very little trouble due to engine failure. This is surely a remarkable record for a high speed boat.

Numerous improvements over the original boat will be incorporated in the new one and it is intended to build the new models particularly for commuting service and fast day cruising.

Accommodations will be provided for a crew forward, aft of the engine room amidships will be a cabin with two folding berths. A separate galley and toilet room will be provided adjacent to this. An attractive arrangement of

seats on the bridge deck to accommodate from 8 to 10 persons on large leather upholstered seats has been worked on to seat comfortably as large a party as can be expected on board. It is also intended that the entire space on the bridge deck portion of the boat may be completely enclosed with a canvas windshield which will be fitted with flexible transparent windows.

The fuel consumption of a boat of this kind is not excessive and when one considers that at a 30-mile rate of speed the boat is moving fast the consumption per mile will be found to be no greater than the consumption per mile of a boat which takes many more hours to reach its destination. Tanks of sufficient size will be fitted to permit of a cruising radius of approximately 900 miles.

Structurally the boats will be constructed in a first-class manner, the hulls of double planked cedar and mahogany, copper fastened throughout and high-class material used in all parts. Demonstrations of the ability of this boat will be made by arrangement with the architects, Messrs. Cox & Stevens. Several of these new boats are already well under construction and it is anticipated that quite a number of them will be distributed before the season is well advanced. Great enthusiasm has greeted the boat on every demonstration trip which it has made. It will be recalled that the original Gar Jr. II established many records among which are those from Miami to New York, Miami to Havana, Miami to Key West, and Key West to Miami, all made in the open ocean regardless of weather conditions. Present-day conditions particularly in connection with the burdensome rate of taxation applied to vessels of the larger size make a little boat of this kind particularly desirable. Its power plant while of large capacity does not occupy any relatively great amount of space and the development of the small fast boat is the logical answer to the prevailing question of living sufficiently far away from the centers of industry where the open spaces are still open and land can still be obtained. A boat of this type has amply proven its reliability in several years of hard service, in fact the forerunner of these boats has probably traveled a greater number of miles than any corresponding boat of its size of which there is any record. During this great mileage the power plant has never failed to function properly when called upon.

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the September Prize Contest

1. What have you done to lessen the labor or annoyance of starting your boat motor? Illustrate with sketches if necessary.
2. Illustrate with sketches an inexpensive iceless refrigerator cooled by evaporation or other scheme which may be built by the boat owner.

(Suggested by H. H., Baltimore, Md.)

Rules for the Prize Contest

ANSWERS to the above questions for the September issue, addressed to the editor of MoToR Boating, 119 West 40th St., New York, must be (a) in our hands on or before July 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used. QUESTIONS for the next contest must reach us on or before July 25. The Editor reserves the right to make such changes and suggestions in the accepted answers as he may deem necessary. The prizes are: For each of the best answers to the questions above, any article or articles sold by an advertiser advertising in the current issue of MoToR Boating of which the advertised price does not exceed \$25, or a credit of \$25 on any article which sells for more

than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR Boating of which the advertised price does not exceed \$5, or a credit of \$5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

What to Do When the Steering Gear Fails

Valuable Suggestions to Enable the Forehanded Boatman to Properly Equip Himself With Emergency Steering Gear

Answer to the Following Question Published in the May issue

"Describe the installation of an emergency tiller on a small cruiser, ease and quickness of attachment with minimum of loose parts being considered."

A Choice in Spare Tillers

(The Prize-Winning Answer)

WHEN you install the steering gear do the work in such a manner that everything runs easily, using a good quadrant of suitable size, bronze cable and large sheaves. Then by giving the gear a little care and a thorough inspection before going into commission, you should not have occasion to rig an emergency tiller. However, provide in advance for the emergency which may never occur, by having at least an inch of the rudder stock squared above the quadrant. Directly over the rudder stock fit a flush deck plate, and get a forging made that will pass through the deck plate and engage the squared end of the rudder stock. Put the tiller away where it can be easily found.

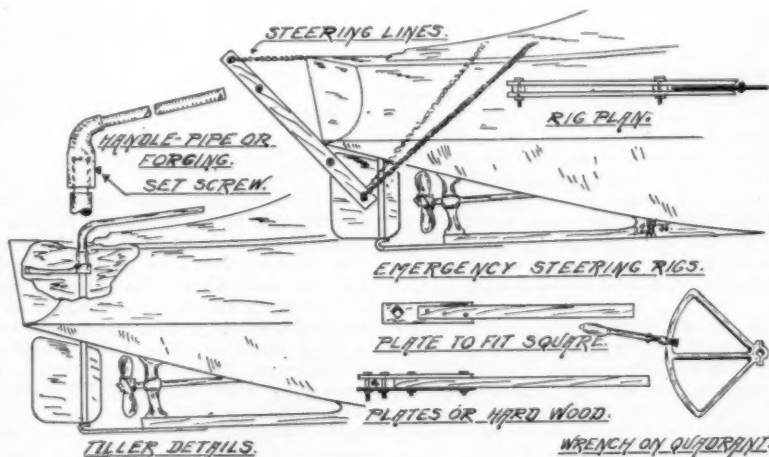
If you have made no provision for the emergency and things go wrong the boat can still be steered so long as the rudder itself remains intact, and is not jammed so that turning is impossible. You can attach lines to the quadrant and lead them over pulleys so as to bring the ends on deck or inside the cockpit. An oar or boat hook lashed to the floor or a cleat may be used as a tiller by fastening the lines to it and using the oar as a lever to move the lines.

In case of the failure of the quadrant, which is unlikely, a large wrench may be attached to the stock and lines made fast to the handle or a pipe placed over the handle. Two small pieces of iron bolted to a stout pole, a piece of iron and the wood, or even two pieces of hard wood so arranged as to clamp on to the rudder stock will answer in an emergency. Any piece of iron having a square hole in it may be used by fitting it over the square and bolting on a lever.

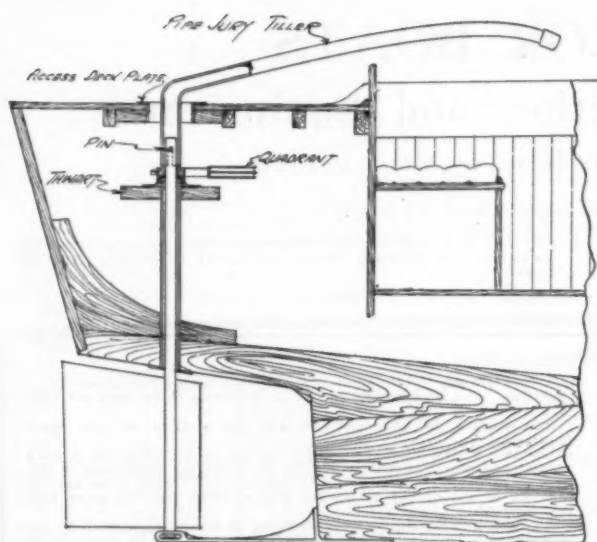
Perhaps it will be impossible to get under the deck to work. In this case take two boards and bolt them together with washers between, so that the after part is wider and round up the end so that it may be pushed over the rudder. The washers cause the rig to bind on the rudder and help to hold it in position. Bore holes so that lines may be attached and carried forward to prevent the rig from slipping off. Attach lines to the long end to steer with.

By doing a little head work you can rig a tiller to steer the boat somewhat after the method given above, and possibly lead lines to the steering wheel. Don't say can't just because you have no bolts. Where there is a will, there is a way. Use nails or screws, wire or even small line. There is material aboard every boat from which an emergency tiller can be rigged.

While you are rigging the tiller the boat need not be left to drift. If a man can get or reach under the deck and move his



A variety of suggestions by W. B. M. to provide for every emergency need when the steering gear fails.



R. R. gets at the rudder stock in an emergency through a deck-plate

arms the boat can be steered. It will be hard work but that is to be expected in an emergency. The man who gives up while there is still a try left is no boatman and should join the rocking chair fleet.

You could steer by using a drag over the stern and working the lines to either side. Anything will answer for a drag, the tender, a couple of life preservers lashed together, boards, etc.

The outboard rudder is decidedly more efficient in case of the failure of the steering gear, and the whole gear is exposed at all times so that any signs of failure will be noticed in time. You can put a wrench on the quadrant or on the square if necessary and steer, and repairs will be easier.

Upon a boat carrying any tools at all the engine room force should be able to rig an emergency tiller on short notice, but it is advisable to prepare for the emergency before it happens, and arrange for fitting a tiller made purposely for the occasion.

W. M. B., Newburgh, N. Y.

A Simple Emergency Tiller

EVERY cruiser should have an emergency jury tiller safely and conveniently stowed in one of the cockpit lockers. This is especially true in view of the fact that it requires neither skill nor money to make one.

The emergency which requires the use of an auxiliary tiller or steering device will always come at the most unforeseen and unprepared time. Boats in the vicinity of New York will generally select a moment when it is necessary to maneuver quickly in the midst of the heavy traffic of Hell Gate to part their steering cables. Another favorite place for steering gear to carry away is on the Hudson River at a moment when all the ferry boats are let loose at once. At a moment like this an emergency tiller is almost worth its weight in gold. If it is kept ready at hand for just such a time it is the work of a moment to pull it out and slip it over the ready end of the rudder stock and the boat can be brought under control and guidance in a very short time. On the other hand, without a device of this kind it is dangerous to the occupants of a boat to be caught in this predicament.

An emergency tiller should consist of but one single part; set screws, etc., on such an item are absurd! A piece of wrought iron pipe, bent as shown in the sketch, with a double slot sawn in the business end to fit over a pin in the head of the rudder stock cannot be improved upon for such duty. The pipe should be of the extra heavy variety and should fit enough over the extended rudder stock. There should be about four inches of stock extending above the quadrant and if necessary the quadrant, thwart, etc., should be lowered to give at least this amount.

A device of this kind can be made so easily in a little spare time that it is well worth the time and energy required. It must be remembered that if this pipe tiller is stowed underneath the floor that a coat of paint or two applied before it is put away will help to keep it free from rust. While in the emergency without previous preparation most anything can be made to serve, oars, boat hooks, and make-shifts of this kind are after all entirely inadequate.

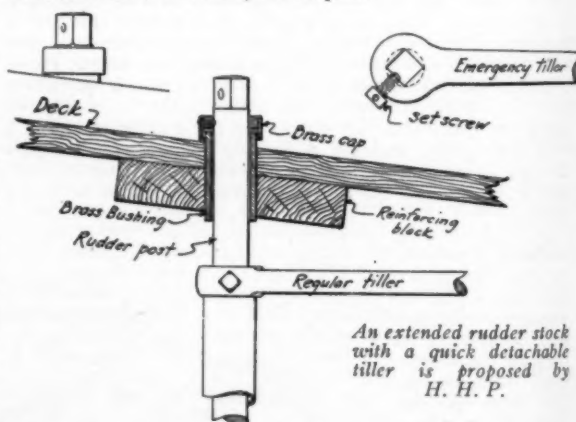
An instance can be related of a case in which a most peculiar accident deprived a cruiser of its steering ability. The rudder blade was fastened between a split rudder stock and in some way managed to work loose and in the motion of the boat due to the sea the blade was ultimately lost among uncomfortable surroundings. In this instance there was no choice but to anchor for the time being and devise ways and means for navigating further. This was accomplished by lashing the oars from the dinghy to the transom in such a way that the blade was in the water while the handle was used as a tiller. Two oars used in this way were successful in handling the boat over a distance of 40 odd miles without great difficulty.

Of course, the sketch does not cover every cruiser, but the principle is the same, the pipe may be bent to suit the individual cases. Such a rig can be shipped into position in the roughest of waters and darkest of nights and will stay put. It is easily made and easily stowed. Its cost is practically nothing.

R. R., New York, N. Y.

An Emergency Tiller Installation

THE sketch shows a simple arrangement for attaching an emergency tiller. There is but one loose part, the set screw in the tiller, and this is never removed entirely; as the rudder post extends above the deck, it is always ready and means are shown for making the deck opening fairly watertight. An extension to the rudder post must be provided for, such as a sleeve or squared socket and stub post, permanently fastened to the original rudder post, assuming that this did not extend above the stern deck and the quadrant or tiller was below. But in building the boat the rudder post could be obtained long enough for the squared end to extend above the deck as shown in the sketch, the regular tiller being clamped, pinned, or set-screwed below the deck, to the post.



Where the post comes through the deck a brass bushing is driven in and it is well to let this down through an oak block fastened in under the deck where the opening comes. The bushing should be set in red lead and extend up about half an inch above the deck. Then a brass cap, either turned from the solid, a casting, or a sleeve driven over and soldered to a disc bored a driving fit over the post, is fitted down over the bushing, nearly to the deck, making a water seal. The end of the post is squared off to take the emergency tiller, which can be a forging or bronze casting with a square hole. A set screw sets against a spotting made by starting a drill into one side of the rudder post end; the head of the screw is drilled for a tightening bar, but it does not need to be set very tight; only enough to let the screw end into the spotting.

H. H. P., Oakland, Calif.

Build Your Own Tender

Plans For a Tender Suitable For an Outboard Motor Which Can Also Be Readily Carried

Answers to the Following Question Published in the May Issue

"Show by means of sketches or plans a tender using an outboard motor that will have a good carrying capacity without taking up too much deck space"

A Handy Small Boat

(The Prize-Winning Answer)

TO perform all the duties expected of it a tender finds its work very exacting. The successful tender must be light, tow easily and well, carry a large load, row well, beach easily, and in this particular case it must stow on deck in small space and be able to travel well with an outboard motor.

As regards lightness, towing, and rowing, beaching, and carrying power, no form can surpass that of the pram. With its square bow and conservative sheer it offers tremendous room and is extremely modest in its demands for deck space. The pram, closely akin to the John Boat, is a proven quantity on all the foregoing qualities. The question of powering with an outboard motor is the quality wherein the ordinary tender, be it round or flat bottomed, generally fails miserably.

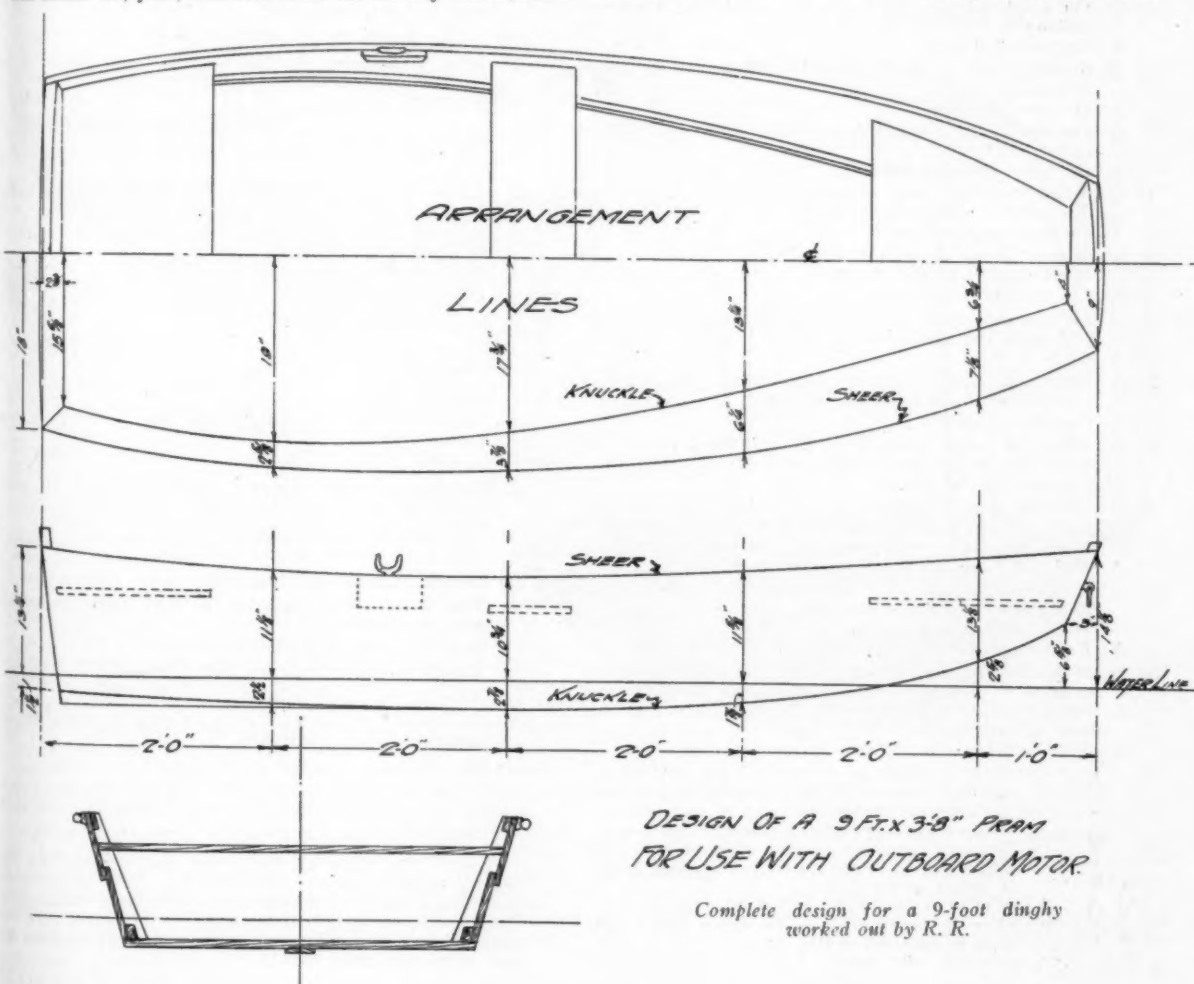
For outboard powering the forward sections should be quite fine while the after sections should be full and flat. On the other hand, a tender having sharp forward sections will shear-off, yaw, and otherwise act terribly when towed.

The pram is the only form that can be given fine forward stations without their being sharp, and thus power and tow equally well.

An inspection of the accompanying plans will show a type rapidly gaining favor which will meet all requirements of the successful tender. For those who enjoy the sport of sailing a dinghy around the anchorage, here is a boat that when fitted with a dagger board and small leg-o'-mutton sail, will hold her own in any company.

Because most tenders are built by their owners there is another consideration that the all-around tender must meet; ease and economy of construction. Any motor boatman can set up moulds from the lines here given and, with a minimum of waste material, easily build a very satisfactory little tender. The dimensions are 9-feet by 3-feet 8-inches, which is about the smallest size for real service, especially with an outboard, and the largest that can be conveniently stowed on deck. Most any available material may be used, but it is recommended that sides be of half-inch cedar or pine and that the bottom be of $\frac{3}{4}$ -inch cedar or pine. The transom should be of $1\frac{1}{4}$ -inch oak, the forward end of 1-inch oak.

R. R., New York, N. Y.









DESIGN OF A 9 FT. x 3'-8" PRAM
FOR USE WITH OUTBOARD MOTOR

Complete design for a 9-foot dinghy
worked out by R. R.

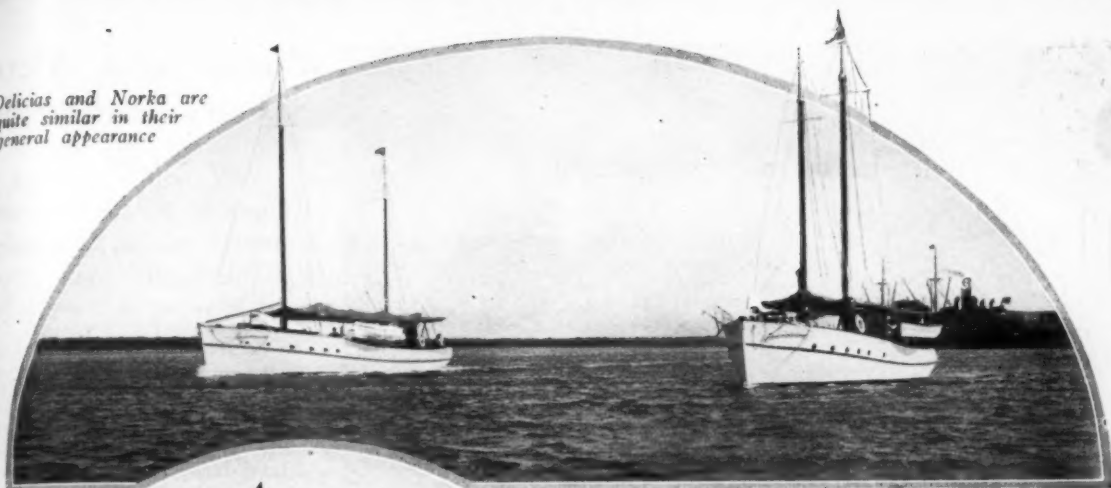
Questions and Answers on Lesson No. 4

Various Types and Uses of Government Buoys

1. Q: Should it be taken for granted that buoys are always where they should be, or where the chart shows they are located?
A: *No.*
2. Q: How may spar buoys be colored?
A: *Red, black, red and black horizontal stripes, black and white vertical stripes, yellow, white, green (special colorings may also be used on private buoys authorized by proper authorities).*
3. Q: How may can buoys be colored?
A: *Usually black, black and white vertical stripes, white, yellow; sometimes red.*
4. Q: How may nun buoys be colored?
A: *Red, red and black horizontal stripes; sometimes black.*
5. Q: How are red buoys numbered?
A: *Even numbers.*
6. Q: How are black buoys numbered?
A: *Odd numbers.*
7. Q: Are buoys painted red and black numbered?
A: *No.*
8. Q: Are buoys painted black and white numbered?
A: *No.*
9. Q: What colors are used on an obstruction buoy?
A: *Red and black horizontal stripes.*
10. Q: What colors are used on a channel buoy?
A: *Black and white vertical stripes.*
11. Q: On which side are red buoys left when entering a port or harbor?
A: *On your starboard hand.*
12. Q: On which side are red buoys left on leaving a port or harbor?
A: *On your port hand.*
13. Q: On which side are black buoys left when entering a port or harbor?
A: *On your port hand.*
14. Q: On which side are black buoys left on leaving a port or harbor?
A: *On your starboard hand.*
15. Q: When entering a port or harbor on which side do you leave buoys with even numbers?
A: *On your starboard hand.*
16. Q: When leaving a port or harbor on which side do you leave buoys with odd numbers?
A: *On your starboard hand.*
17. Q: Do you pass close to or far away from a buoy colored with black and white vertical stripes?
A: *Close to.*
18. Q: Do you pass close to or far away from a buoy colored with red and black horizontal stripes?
A: *Far away from.*
19. Q: When off shore, going from Maine toward Florida on which side do you pass red buoys?
A: *On your starboard hand.*
20. Q: If on the chart you saw a buoy marked S4, what kind and color of a buoy would you look for and on which side would you pass it when entering a harbor?
A: *Red spar buoy No. 4; pass on your starboard side.*
21. Q: If on the chart you saw a buoy marked N6, what kind and color of a buoy would you look for and on which side would you pass it when leaving a harbor?
A: *Red nun spar buoy No. 6; pass on your port hand.*
22. Q: If on the chart you saw a buoy marked C5, what kind and color of a buoy would you look for and on which side would you pass it when at sea, running from Cape Hatteras to Cape Charles?
A: *Black can buoy No. 5; pass on your starboard hand.*
23.  Q: Show by means of a rough sketch how a buoy which is used to indicate the center of a channel is shown on the chart.
A: *(Cut of black and white vertical stripe buoy.)*
24.  Q: Show by means of a rough sketch how a buoy which is used to mark a rock or isolated danger is shown on the chart.
A: *(Cut of red and black horizontal stripe buoy.)*
25.  Q: Show by means of a rough sketch how a light buoy is indicated on the chart.
A: *(Cut of light buoy.)*
26.  Q: Show by means of a sketch how a black can buoy is shown on the chart (give it an odd or even number as would be proper).
A: *(Cut of black buoy with odd number and the letter "C".)*
27.  Q: Show by means of a rough sketch how a bell buoy is shown on the chart.
A: *(Cut of buoy with the word bell.)*
28.  Q: Show by means of a rough sketch how a buoy which is both a bell buoy and a light buoy is indicated on the chart.
A: *(Cut of combination bell and light buoy.)*
29. Q: Describe the light characteristics of an occulting light buoy.
A: *A steady light suddenly and totally eclipsed, with the period of the eclipse less than or equal to the period of light.*
30. Q: Describe the light characteristics of a flashing light buoy.
A: *A light suddenly and totally eclipsed, with the period of eclipse greater than the period of light.*
31. Q: A buoy on the Hudson River is marked FL. GN. EV. 3 SEC. Describe this light.
A: *A flashing green light flashing once every three seconds.*
32. Q: A buoy on the chart is marked FL. W. WHISTLE. Describe the characteristics of this buoy.
A: *A combination light and whistle buoy, the light is a flashing white.*
33. Q: If you are in doubt on which side a buoy should be passed how do you determine it?
A: *Stop, consult chart, do not proceed until you are sure.*
34. Q: What Government publication gives you complete information about all buoys?
A: *Buoy List.*
35. Q: If you find a buoy which is not in its proper location or light buoy whose light is extinguished at night, to whom do you report this?
A: *To the Coast and Geodetic Survey Office, Washington, D. C., or nearest Coast and Geodetic Field Station, or to the Bureau of Light Houses, Washington, D. C., or to the nearest Superintendent of Lighthouse.*
36. Q: Describe the rig of a cat boat.
A: *One mast and one sail.*
37. Q: Describe the rig of a yawl.
A: *Mainmast forward, short mizzen mast aft of the after waterline, fore and aft rigged.*
38. Q: Describe the rig of a sloop.
A: *Single mast, headsail, mainsail and sometimes topsail, fore and aft rigged.*
39. Q: Describe the rig of a ketch.
A: *Mainmast forward, mizzen stepped forward of after water-line. Fore and aft rigged.*
40. Q: Describe the rig of a brig.
A: *Two masts, square sails on both masts.*
41. Q: Describe the rig of a brigantine.
A: *Two masts, square sails on foremast and fore and aft sails on mainmast.*
42. Q: Describe the rig of a schooner.
A: *Two or more masts all fore and aft rigged.*
43. Q: Describe the rig of a bark.
A: *Three or more masts all square rigged except aftermast which is fore and aft rigged.*
44. Q: How does a yawl differ from a ketch?
A: *The mizzen of a yawl is stepped abast of the after waterline; the mizzen of a ketch is stepped forward of the after waterline.*

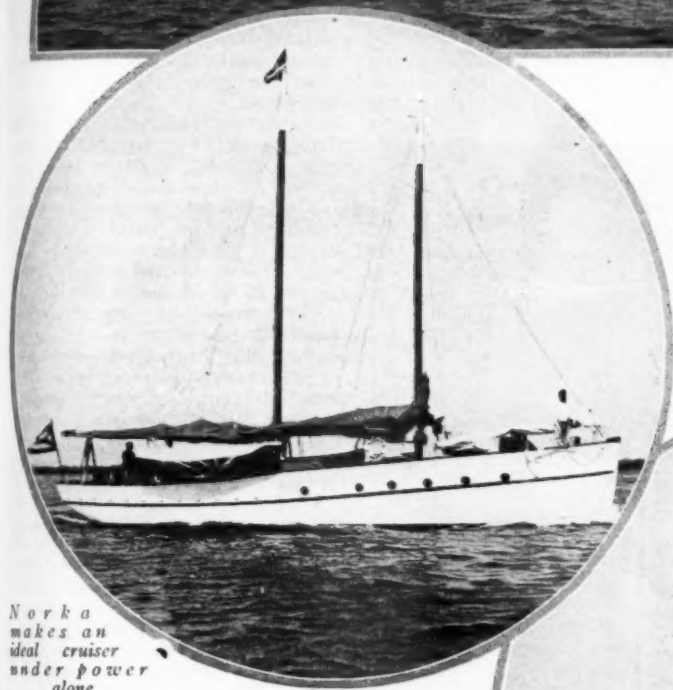
NOTE:—The types of buoys are not indicated on the chart by different shapes. The letters C, N, S, etc., with the colors black and red and a star for a light buoy and the word "bell" for a bell buoy and the word "whistle" for whistling buoy are the only indications used on a chart to show the type of the particular buoy.

Delicias and Norka are quite similar in their general appearance



Delicias and Norka, West Indian Auxiliaries

Heavily Constructed Ketches of
a Type Popular in Cuban Waters
Perform Well on Trials by Aid
of Their Standard Motors



Norka makes an ideal cruiser under power alone

GROWN up in the sport of yachting, R. A. Brooks has owned and operated many types of cruising craft. His newest vessel, Delicias, has just been completed for him of native materials and local labor at a plant in Oriente, Cuba. Two similar vessels were built at the same time, the other being Norka, built for Dr. E. Molinét, of Chaparra, Cuba.

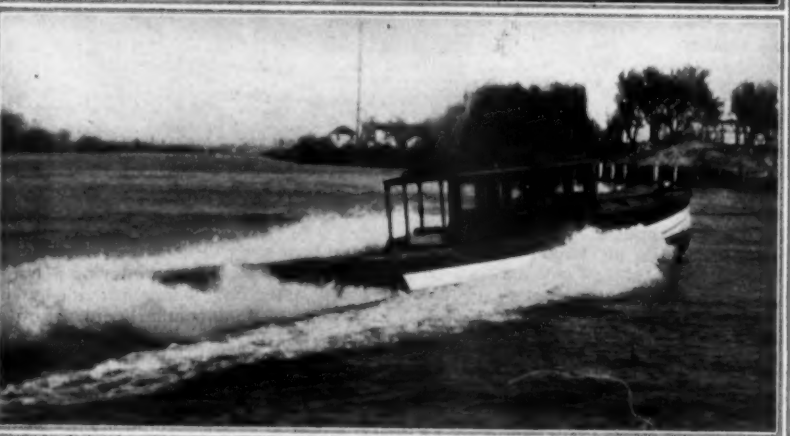
His earlier vessels were auxiliaries of a smaller type, but these proved to be too light to stand the occasional severe hurricanes of the tropics. The experience with these led to the design and construction of these newer boats which are larger and heavier than the earlier ones. These new boats are both 63 feet in length and powered with a 70-90 h.p. Standard engine of the new type. Their design embodies all the good points that many years of cruising in the tropics have shown to be essential. They are built of hard woods and all frames are natural bends sawn to shape. The planking is of two-inch mahogany. In order to reach the best fishing grounds along the numerous islands of the north coast of Cuba the draft has been limited to four feet which can be carried to all necessary points. The original design provided for a center board, but this was omitted later since it reduced the strength of the hull and cut up the interior. The Standard engine is depended upon to drive the boat to windward any time that may be necessary.

On recent trials the boats performed much better than



Delicias handles well with the aid of her Standard motor

had been anticipated and they steer well even in a following sea and can be handled by two men. The interior appointments are complete, all staterooms being provided with ample furniture and fittings. A tank compartment separated by bulkheads from the rest of the boat contains copper tanks which carry 600 gallons of gasoline and 780 gallons of water. The engine room is fitted with a 70-90 h.p. Standard engine which drives also a large generator for charging the storage battery. A small auxiliary generator is also carried for furnishing current when in port.



Pueblo and Alert, Speedy California Craft

Runabouts for Pleasure and Commercial Service Render Reliable Service With Powerful Marine Motor Equipment

THE adjoining illustrations were taken on the San Joaquin River, near Stockton, Calif. They show Pueblo, a beautiful all-mahogany runabout used for recreation purposes, while the other craft, with the standing top for shelter, is Alert, a spud buyer's boat, used six, and sometimes seven days a week, fifty-two weeks of the year for purely commercial purposes.

Alert was designed and built by Stephens Bros. of Stockton, Calif., for a large produce company. This craft is of the round bottom type, 34 feet in length and 6 feet beam.

There are about 1,200 miles of waterways surrounding the delta farms where the produce company's buyers must call, and which can best be reached by water. Some of these boats run from 1,000 to 1,500 miles per month and they must be fast, and particularly reliable.

This is probably the first time that an engine of this quality has been placed in a commercial craft of this kind. Mr. Stephens, the builder, however, was convinced that the purchaser of this equipment thoroughly believed speed a most important factor, provided the engine was absolutely dependable. The six-cylinder, 200 h.p. Hall-Scott motor installed drives Alert at a 31-mile clip.

The other boat, Pueblo, shown in the photographs, is a product of Detroit. It was designed by Mr. John L. Hacker, famous naval architect of that city, and built by the Hacker Boat Co. It was transported overland on freight cars. The engine was installed in San Francisco Bay. Pueblo is owned by Leland Stanford Scott, of Piedmont, Calif., who uses it for recreation purposes. This boat is equipped with a 125 h.p. balanced four Hall-Scott marine engine, and has been a wonderfully successful boat on San Francisco Bay.

This boat is 28 feet 6 inches in length, 6 feet 8 inches beam. It has a forward cockpit capable of carrying and seating comfortably five passengers and an after cockpit taking care of the same number of people. The entire controls and steering equipment are in the forward cockpit which has proven extremely satisfactory from every angle. Pueblo has a speed of close to 33 miles per hour.

Parallel Sailing

The Method of Making the Conversion Between Departure and Difference of Longitude, When the Vessel Sails Along a Parallel—The Fifth Lesson of a Correspondence Course Which Will Be a Complete Treatise on the Subject of Dead Reckoning

By Dean Potter

Chairman, Committee on Instruction, United States Power Squadrons, Inc.

PARALLEL sailing is a spherical sailing, and is employed to make the conversion between departure and difference of longitude, when the vessel sails along a parallel, thus making easting or westing, but without changing her latitude. The method takes into account the spherical form of the earth, and the fact that the linear value of longitude arc decreases as the latitude increases. The solution, however, is not by spherical trigonometry strictly speaking; but by an application of the same principles of plane trigonometry already considered. All the solutions heretofore made have been based upon the proportions which certain parts of triangles have to each other. If we can find the proportion which departure (miles) bears to minutes of longitude (arc), we can readily convert one into the other. The fact is, that the proportion between difference of longitude and departure is the same as that between the hypotenuse and adjacent side of a right triangle, the latitude, instead of the course, being taken as the angle.

Suppose we were looking at the earth from a point over the equator. The equator, parallels and meridians would appear as in Fig. 18. Let TT' represent a departure along a given parallel, between the two meridians PM and PM' . Let the arc of the equator MM' represent the difference of longitude between the same meridians.

Now in MM' on the equator, a minute (arc) equals a nautical mile. In the arc TT' there are the same number of minutes as in MM' , but fewer miles. Suppose TT' on a particular parallel to be 75 miles long, and MM' 100 miles. On MM' a mile equals a minute. Thus there would be 100' in MM' . But there are also 100' in TT' . A minute, therefore, at TT' would equal 75/100ths of a mile. Having this proportion, we could convert minutes of arc on that parallel into miles of departure, or vice versa.

P is the pole, TT' an arc of a parallel of latitude, MM' a similar arc of the equator, and PM and PM' two meridians. Now, according to the theorem just stated, similar arcs of circles are proportional to their radii. Plainly the arc

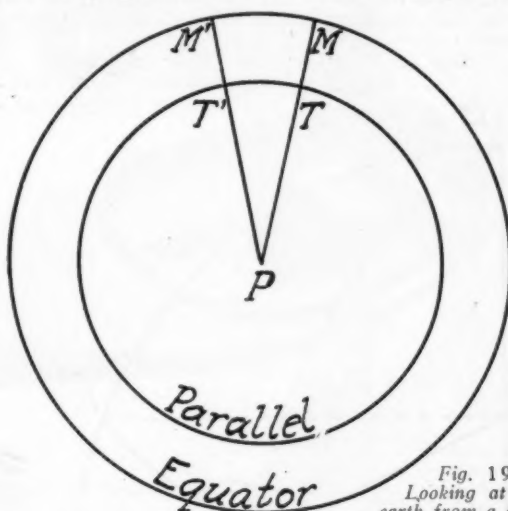


Fig. 19:—
Looking at the
earth from a point
directly over the pole

MM' on the equator, and the arc TT' on the parallel, are similar arcs, for they are both cut by the same angle at the center of the earth.

Now let us take a cross-section view of the same parts of the sphere. Imagine the radii of these circles, the equator and the parallel, to be drawn as in Fig. 20. The angle TOT' equals the angle MCM' , and the arcs cut by them, TT' and MM' , are similar. Being similar, they are proportional to their radii. OT is the radius of the arc TT' , and CM is the radius of the arc MM' . So we have:

$$TT' : MM' :: OT : CM$$

In Fig. 20, P is the pole, C the earth's center, MM' the longitude arc on the equator, where minutes of arc and miles are interchangeable and TT' the departure along a parallel, while PTM and $PT'M'$ are meridians. CM is the radius from the earth's center or axis to the equator, and OT is the radius of the parallel.

Now we saw above that

$$TT' : MM' :: OT : CM$$

But CM equals CT , because CM is the radius from the earth's center to its surface, and is the same, whether drawn from C to M , or to T , or to any other point on the surface. Thus we have:

$$TT' : MM' :: OT : CT$$

But TT' represents a departure (miles) and MM' the corresponding difference of longitude on the equator (also equaling miles). Thus, substituting terms:

$$\text{Dep} : D Lo :: OT : CT$$

That is, the proportion between Dep and $D Lo$ is the same as the proportion between OT and CT , these being respectively the radii of the parallel and equator.

But note that by swinging the equatorial radius up to T , we have made a right triangle CTO . Now we have found from our plane trigonometry that, working from the angle CTO , CT is the hypotenuse and OT the adjacent side; and the adjacent side equals the hypotenuse \times the cosine of the angle. But what is the angle CTO ? Clearly the same as the angle TCM . For when parallel lines are crossed by a straight line, as in Fig. 21, the alternate angles are equal, angle x equaling angle y . But angle TCM (which equals CTO) is the angle at the earth's center representing the latitude. Latitude is the arc of the meridian between the equator and a parallel. or, what is the same thing, it is

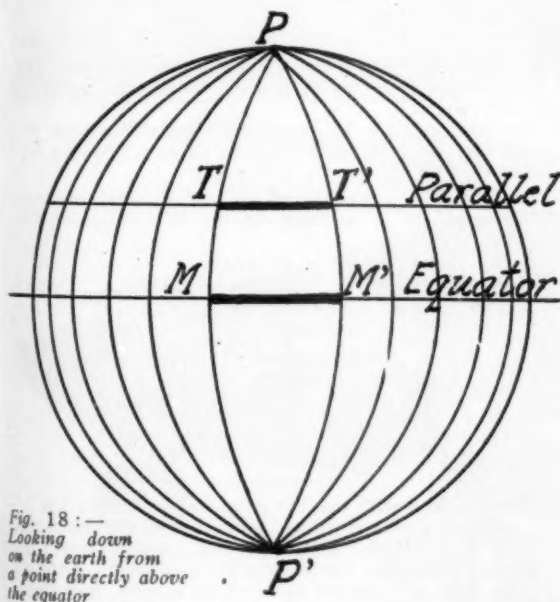


Fig. 18:—
Looking down
on the earth from
a point directly above
the equator

The proportion between miles and minutes on any parallel of latitude may be found by a simple formula, the derivation of which we shall now explain.

Geometry teaches that *similar arcs of circles are proportional to their radii*.

Imagine ourselves to be over the pole looking down upon the earth. We would see the pole, the equator, and various parallels and meridians. In Fig. 19 some of these are shown.

the angle at the earth's center between the plane of the equator and a line drawn to the parallel.

Now it will be apparent that we have found our sought for proportion. For, as stated above,

$$\begin{aligned} \text{Dep} : DLo &:: OT : CT \\ \text{And } OT &= CT \cos \text{Lat.} \\ \text{Hence, } \text{Dep} : DLo &:: CT \cos \text{Lat} : CT \end{aligned}$$

As we found when we studied simple proportion, the product of the means (the two middle factors) equals the product of the extremes (two outer factors). We solve a simple proportion by multiplying the two means, and then dividing the product by either extreme to get the other. Now note that CT comes into the equation twice, once as a multiplier and again as a divisor. There is no sense of multiplying and then dividing by the same factor. In such cases, we may cancel out the factor, and then our equation becomes:

$$\begin{aligned} \text{Dep} : DLo &:: \cos \text{Lat} : 1, \text{ or} \\ \text{Dep} &= DLo \times \cos \text{Lat} \end{aligned}$$

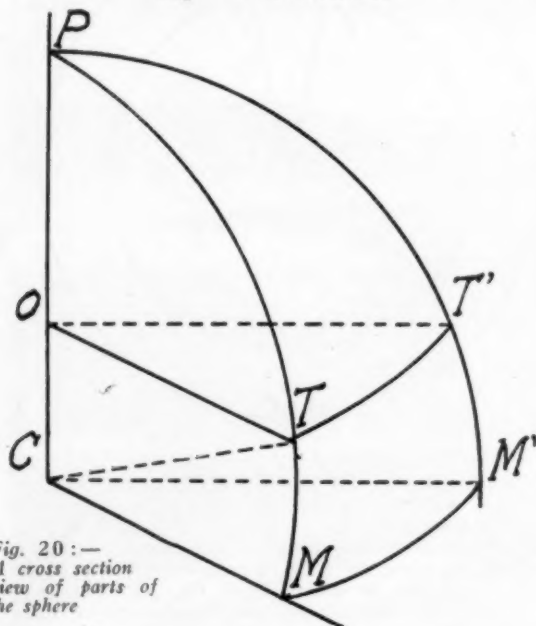


Fig. 20 :—
A cross section
view of parts of
the sphere

We have given the solution in the form of a simple proportion, because it may thus be more familiar to some readers. A much neater way of expressing it is employed in Bowditch, p. 75, as follows:

$$\begin{aligned} \frac{TT'}{MM'} &= \frac{OT}{CM} \text{ or } \frac{\text{Dep}}{DLo} = \frac{r}{R} \\ r \text{ being the radius } OT \text{ and } R \text{ the radius } CM \text{ or } CT. \text{ Then,} \\ \text{as shown above, } r &= R \cos L, (L \text{ being the latitude}) \text{ and} \\ \frac{\text{Dep}}{DLo} &= \frac{R \cos L}{R} \end{aligned}$$

Now cancel out R, and the equation becomes,

$$\begin{aligned} \frac{\text{Dep}}{DLo} &= \cos L \\ \text{Transposing, if } \text{Dep} \div DLo &= \cos L \\ \text{Then, } DLo \times \cos L &= \text{Dep} \\ \text{And, } \text{Dep} \div \cos L &= DLo \end{aligned}$$

And these are the relations between minutes of longitude and miles of departure.

It was stated in an earlier lesson that dead reckoning problems could be solved by three functions, the sine, cosine and tangent. But it is convenient to employ an additional one, the secant, in the parallel sailing problem. The secant is what is called the *reciprocal* of the cosine.

$$\text{The cosine} = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\text{The secant} = \frac{\text{Hypotenuse}}{\text{Adjacent}}$$

Now dividing by a function or multiplying by its reciproc-

cal gives the same result, and it is easier to multiply than to divide, by logarithms. So instead of dividing the departure by the $\cos L$, it is preferable to multiply the Dep by $\sec L$, the result being precisely the same. Thus Bowditch adopts the following formulae for making the interconversion between Dep and D Lo in parallel sailing:

$$\begin{aligned} \text{Dep} &= DLo \cos L \\ DLo &= \text{Dep} \sec L \end{aligned}$$

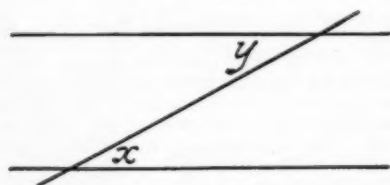


Fig. 21:—When parallel lines are crossed by a diagonal one the alternate angles are equal

Two cases arise under parallel sailing:

1. Where the D Lo between two places on the same parallel is given, to find the Dep, and
2. Where the Dep is given to find the D Lo.

D Lo will often be given in degrees and minutes. These must be turned into minutes before undertaking the solution.

The sailing may be solved either by trigonometry, using logarithms, or by inspection, using Table 2. Table 2 was prepared primarily as a plane sailing table, for which reason the elements were named Dist, Lat and Dep. But really, Table 2 is the solution of a plane right triangle, and it may be used to solve any right triangle, if we but remember that Dist is the hypotenuse, Lat the adjacent, and Dep the opposite sides. The Lat (or adjacent side) given in the table is the Dist (or hypotenuse) multiplied by the cosine of an angle, which heretofore we have called the course. The Table solves any problem representing the hypotenuse multiplied by the cosine of an angle. In parallel sailing, $DLo \cos \text{Lat} = \text{Dep}$, the D Lo corresponding with the hypotenuse (Dist in Table 2) and the Dep with the adjacent side (Lat in Table 2), the angle used being the Lat. Thus, in using the traverse table for parallel sailing problems,

$$\begin{aligned} DLo &= \text{Dist} && \text{in the Table} \\ \text{Dep} &= \text{Lat} && \text{in the Table} \\ \text{Lat} &= \text{Course} && \text{in the Table} \end{aligned}$$

The following is the rule: "Go into Table 2 with the Lat as a course. Find D Lo in the Dist column, and Dep in the Lat column."

In the later editions of Bowditch, a panel has been inserted at the bottom of each page in Table 2, showing the proper column to use.

Example 36: A vessel in Lat. $39^\circ 30' N$, sails true east from Long. $70^\circ 49' W$ to Long. $67^\circ 13' W$. Required, the departure.

$$\begin{aligned} \text{Lo left } 70^\circ 49' W \\ \text{Lo in } 67^\circ 13' W \\ DLo &= 3^\circ 36' E \\ DLo &= 216' \end{aligned}$$

By computation:

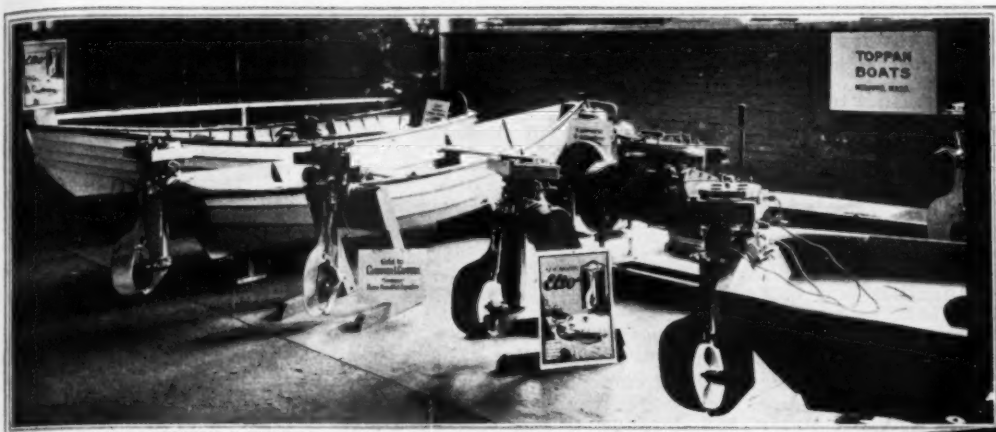
$$\begin{aligned} \text{Formula, } \text{Dep} &= DLo \cos L \\ DLo 216' &\log. 2.33445 \\ \cos L 39^\circ 30' &\log. 9.88741 \\ \text{Dep } 166.7 E &\log. 2.22186 \end{aligned}$$

By inspection:

Go into Table 2 with the Lat as a course. Since Lat is $39^\circ 30'$, take out elements for 39° and 40° , and get the mean by interpolation. With Lat 39° (p. 608) and D Lo 216 in Dist column, find in the Lat column the Dep which is 167.9. At p. 610, Lat. 40° , against 216 in Dist column, find Dep. 165.5 in Lat. column. The diff. in Dep. for 1° Lat. is 2.4 and for $30'$ would be 1.2. The Dep. sought is 166.7.

Example 37: Ship in Long. $37^\circ 16' W$, sailing West along parallel $21^\circ 15' S$, makes Dep. of 367 miles. Find D Lo and Lo in.

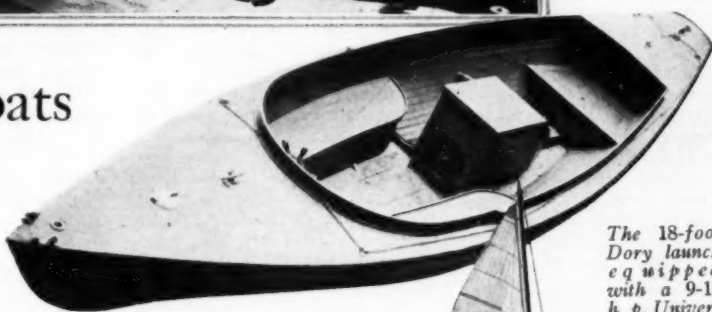
(Continued on page 102)



A recent exhibit of small boats and motors by the Toppan Boat Co. of Medford, Mass. at the Home Beautiful Show in Boston. This exhibit showed only a small portion of the varied line of small pleasure craft which this company builds

Popular Small Boats

Increasing Activity Among Builders of Pleasure Craft Indicate an Active Season



An attractive combination is this 15-foot Dory type row boat fitted with an Elto outboard motor. A speed of 8½ m.p.h. is claimed for this when carrying six people



The 18-foot Dory launch equipped with a 9-12 h. p. Universal motor is one of their most popular models and is in large demand among discriminating yachtsmen



The new Toppan Tot, 15-foot Marconi rigged catboat is a very attractive little boat and is claimed to be the fastest 15-foot sail boat in the world today. It is also particularly well adapted to carry an outboard motor for auxiliary propulsion



The Elto outboard motor which is used by the Toppan Boat Co., for powering all their boats equipped with this type machine is a twin cylinder engine of exceptionally light weight. A special aluminum alloy is used for the rudder and strut portions to accomplish this. Its freedom from vibration adapts it remarkably well to this work

Racing Season Gets Underway

With First Races of Season at Milwaukee a Success Other Localities Busy Themselves for Championship Events

Fast Speed Made on Pacific

THE fastest mile ever covered by a motorboat on the Pacific Coast was accomplished by W. W. Paden's Hurricane II when she sensationally broke last year's record for mile speed trials recently in the smooth waters of the Los Angeles Harbor.

Several hundred motorboat enthusiasts who witnessed the event on yachts and cruisers which lined both sides of the course were thrilled by the Hurricane II when she made her record dash in 60 seconds flat or at the rate of a mile a minute.

This broke the record established last year in the Hal Roach speed trials on the same course, when Frank A. Garbutt's Mystery V covered the mile in 1 minute and 9 seconds or at the rate of 52.18 miles per hour, which was faster than any displacement boat had ever gone in local waters.

Billy Paden becomes the permanent possessor of the Los Angeles Athletic Club trophy cup as a result of the new coast record established by his craft. These speed trials are now held annually under the auspices of the L. A. A. C. Motorboat Racing Association and are Free-for-All.

Dustin Farnum's Miss Los Angeles II traveled at a speed of 55.70 miles per hour in her fastest lap, also breaking Garbutt's record of last year. The third entry in this event, Joe Fellows' Fellows IV did the mile in 1 minute and 26.2 seconds, which was better than 41 m. p. h.

Frank A. Garbutt's Mystery V did not figure in the trials and her owner forfeited his entrance fee. She was to have gone after a new record, but after her salt water ducking in the Fellows' Day race, following which the engines had to be overhauled, her power plant could not be made ready.

The trials started at 11.30 o'clock and each boat was allowed three runs over the mile straightway course and the winner was computed upon the fastest mile made, speed per hour.

Hurricane II, driven by Wild Bill Cubbons, made the new record in her third trial over the course. She is powered with twin Liberty motors and of Hydroplane construction.

Miss Los Angeles II, driven by Dustin Farnum and Harry Vorhauer, made her best mile the first time over the course. Of one-step hydroplane design, Miss L. A. is motored by two Fiat engines.

Piloted by Old Reliable Joe and his son Rusty, Fellows IV made her best time in the third trial. Hall-Scott motors force this boat over the water.

In the 800 cubic inch displacement class, Harold W. Tuttle's Valve-in-Head I made the mile in 1 minute and 46.3 seconds, developing a speed of 33.77 m. p. h. and capturing the handsome trophy offered by the Howard Automobile Company, of this city.

Other boats entered in the 800 cu. in. class were: Ralph Hemlin's Joker, Frank A. Garbutt's Mystery V and C. M. Stagg's Stagg I.

Officials of the association who staged the event included George Adair, Les Henry, Lonnie Fegans and Hal Weller, timers; Major R. D. Ryus and Nye Williams, starters; Ed. Caister, Ernie Clark and Aubrey Austin, judges; Walla Wheller, Dr. E. G. Eisen, Arthur Goodwin and Charley Keppen, scorers.

Hacker 26-Footers Ready

WALTER B. WILDE, President of the Mississippi Valley Power Boat Association, and holder of the speed title of central west rivers, is now the possessor of a racing runabout of Hacker design and proposes to race this season, not only for the title in hydroplane classes but also in the racing runabout classes. The new boat had some very satisfactory try-outs on Peoria Lake at Peoria, Ill., recently and is in the pink of condition for the official regatta of the M. V. P. B. A. which is to be held in Peoria July 1st, 3rd and 4th. Owner of a string of Meteors Mr. Wilde has christened the new runabout Meteor V. She is equipped with an engine developing about 125 h.p. and is calculated to do about 35 miles per hour. The free-for-all runabout championship of the Mississippi Valley Power Boat Association is held by H. M. Hammer of St. Louis.

(Continued on page 112)

Principal Racing Events of 1922

Club or Association	Date	Place	Classes	Chairman of Race Committee
Atlantic City Yacht Club	July 1, 2	Atlantic City to New York—New York to Atlantic City	Cruisers, 30'-60'	S. B. Endicott, Jr., Union Bank Bldg., Atlantic City, N. J.
Columbia Yacht Club			Cruisers, 60'-90'	C. F. Chapman, 119 West 40th St., New York, N. Y.
Mississippi Valley Power Boat Association	July 1, 3 and 4	Peoria, Ill.	All Classes	A. C. Strong, Evanston, Ill.
New York Athletic Club	July 8	New York to Block Is.	Cruisers and Express Cruisers, 28' to 65' L. W. L.	Walter Sullivan, 221 E. 58th St., New York, N. Y.
Interlake Yachting Association	July 19-21	Put-in-Bay, Ohio	All Classes	A. R. Hackett, 3934 Avery Ave., Detroit, Mich.
New York Motor Boat	July 23	Hudson River Newburgh & Return	Cruisers and Open Boats	F. W. Horenburger, 119 West 40th St., New York, N. Y.
Chicago Pageant of Progress	Aug. 3-14	Chicago, Ill.	Hydroplanes	Sheldon Clark, 910 Conway Bldg., Chicago, Ill.
New York Athletic Club, A. P. B. A. Handicap Cruiser Championship	Aug. 5	Long Island Sound	Cruisers, 30' to 45' L. W. L.; Express Cruisers, 30' to 60' L. W. L.	Walter Sullivan, 221 E. 58th St., New York, N. Y.
Lake George	Aug. 12, 19-26	Lake George	28' Runabouts; 1100 cubic inches	R. E. Henry, 27 Pine St., New York, N. Y.
New Bedford	Aug. 14-19	New Bedford, Mass.	All Classes	B. F. Dobson, New Bedford, Mass.
Buffalo Launch Club	Aug. 17, 18 and 19	Buffalo, N. Y.	Leary Trophy; 610 cubic inch, one design; 2250 cubic inch runabouts; 2250 cubic inch hydroplanes	William H. Howe, 96 Soldiers' Pl., Buffalo, N. Y.
Hamilton, Ont.	Aug. 24, 25, 26	Hamilton, Ont.	Fisher-Allison Trophy; Runabouts, 2250 cubic inch; Cruisers	H. B. Greening, Hamilton, Ont.
Detroit Yacht Club	Sept. 1-4	Detroit, Mich.	32' Wood-Fisher 25' Gold Cup; Hydroplanes; Cruisers; Chance Race; Handicap Cruisers	F. R. Still, American Blower Co., Detroit, Mich.
Toronto Motor Boat Club	Sept. 3-7	Toronto, Ont.	Runabouts and Hydroplanes	C. R. Allison, 528 Bank of Hamilton Bldg., Toronto, Can.

Twelve More Students Qualify for Pilot Certificates in MoToR Boating's Correspondence Course by Passing All Thirteen Lessons. The Total to Receive Certificates is Now Seventy-Three

John Reichester
George A. Rawson
Nick Antoniou

Harry R. Broll
F. G. Moe
Fred Scadden

W. Blood-Smyth
Addison E. Jones
J. B. Dunbaugh

Michael Abener
Mrs. W. E. Clarke
W. H. Palmer

Interest in Correspondence Courses Continues

Many Answers Are Still Coming in to the First Correspondence Course While Interest in the Dead Reckoning Course Grows—Questions for Lesson No. 4 of the Advance Course

ON some of the earlier pages of this issue of MoToR BOATING will be found the fifth lesson of the Correspondence Course in Dead Reckoning, now being conducted. The subject of this is Parallel Sailing, and we are sure that all students who have followed this course will be greatly benefited by it. The subject of Parallel Sailing has been very clearly covered by Mr. Potter in this chapter, and we trust that every reader of MoToR BOATING will take the time necessary to study and digest this subject.

The work presented in this chapter, and those which are still to come, will be found to be decidedly more interesting than the previous ones which dealt only with the mathematics of navigation. Unfortunately, in order to become a navigator such ordinary operations as are required by the mathematical part of the work must be mastered to insure proficiency. We know that all those who have successfully studied the earlier lessons in this course will have no further difficulty in following it on to a successful conclusion. The practical value of what is to follow is inestimable, particularly to the venturesome cruiser who likes to try his skill by offshore work.

On page 36 of this issue will be found the questions and answers on Lesson No. 4 of the first Correspondence Course which has been running for some time in the pages of MoToR BOATING. There is still time for new students to send answers to the questions on all lessons succeeding No. 4. Naturally, having printed the answers to these questions, we can no longer accept papers which cover this or any of the earlier lessons. Answers which are sent in should be written on one side of the paper only and addressed to the Editor of MoToR BOATING, 119 West 40th Street, New York, N. Y. Those papers which were received in this office during the month of June will be forwarded to the examiners on the last day of the month, and will be returned by them in time to permit us to publish

the names of the successful students in the August issue of MoToR BOATING. In addition, all papers which are received in the Dead Reckoning Course will be similarly forwarded to the examiners at the same time, and the names of the successful students will also appear in the August issue.

The certificates which will shortly be distributed to the successful students in the first Correspondence Course are now being signed by the various examiners, and will be mailed to their recipients as soon as possible. The examiners have reported that twelve more students have completed the entire thirteen lessons with more than 80 per cent on each paper, and are also entitled to receive the certificate. Their names appear at the top of this page. The total number of students who have succeeded in passing all these lessons now numbers 73. Some impatient students have asked about the certificates, and for their benefit we would say that they will be mailed as soon as they can be completed. It is necessary to send them to each of several different examiners for their signature, and naturally this takes much time.

The questions for Lesson No. 4 on the subject of Plane Sailing, which are printed below, cover the lesson in the Dead Reckoning Course which appeared in the June issue, and replies to these should be promptly returned. There is still time to submit papers on the earlier lessons of this course, since answers can be sent in at any time.

The questions and answers published on page 36 pertain to Lesson No. 4 of the first Correspondence Course which covered in detail the types and uses of Government buoys as well as the various types of sailing vessels. Those who have not sent in answers to Lessons Nos. 5 to 13, inclusive, may still do so and will be entitled to a Pilot's Certificate, provided they pass all thirteen lessons by at least 80 per cent. Those who have failed to attain a passing mark in one or more lessons may also submit new answers to these if they so desire.

The names of those who successfully passed papers submitted during May will be found on page 76

QUESTIONS ON LESSON No. 4—DEAD RECKONING COURSE

Answers to these questions may be submitted at any time to the Editor of MoToR Boating, 119 West 40th Street, New York, N. Y.

1. What are the two general classes of sailings?
2. Name and briefly describe the sailings, stating the special purpose of each.
3. On what assumption is plane sailing based?
4. Is the assumption correct, and, if not, are there any cases in which the error might be substantial?
5. What elements are employed in plane sailing, and what results obtained by it?
6. Can departure be converted into difference of longitude, or vice versa, by plane sailing? Solve the following by computation and inspection, submitting complete workings, and not merely the answers.
7. Vessel in Lat. $26^{\circ} 13'$ S, sails SW x W 327.4 miles. Find Dep and Lat. in.
8. A vessel sails until she makes good a DL of 149.2 N, and a Dep of 94.6 W. What is the C and Dist?
9. A and B are on the same meridian. C is 376 miles true east of A. B is 556 miles in a generally south-westerly direction from C. What is the DL of A and B? What is the course from B to C, and from C to B?
10. A vessel makes good a Dist of 377 miles in a generally southeasterly direction, and a DL of 329 miles. What course does she sail? What is her Dep made good?
11. Vessel in Lat. $2^{\circ} 16'$ S, Long. $51^{\circ} 23'$ W, desires to sail to Lat. $1^{\circ} 39'$ N, Long. $48^{\circ} 14'$ W. What is the C and Dist? (Note: Near the equator, the earth's curvature may be neglected, and minutes of Lat. and Long. treated as miles.)
12. (Solve by inspection only) Vessel takes departure from Cape Cod Light, bearing SSE 4.5 miles, and sails the following courses and distances: E $\frac{3}{4}$ N, 37.6 miles; ESE, 49 miles; 47° , 13 miles; SSW $\frac{3}{4}$ W, 14 miles; 297° , 18.5 miles; 136° , 28 miles; South, 8.4 miles; East, 19 miles; North, 21 miles. Find DL and Dep made good, Lat. in, and C and Dist back to Cape Cod Light.

The examiners report that some students have submitted papers in which computations have been carried out to seconds of arc, or to small fractions of a mile. Such practice is bad. Dead Reckoning computations should not be worked to a finer point than to the nearest tenth of a mile or minute.

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

Kermath Plant Enlarged

The Kermath Manufacturing Company announce the removal of their offices to 5890 Commonwealth Ave., Detroit. This adjoins their present factory and new addition which will be completed shortly. The increased facilities will afford 10,000 feet of additional manufacturing and office space. The new building is of heavy mill construction and the upper floor will be reserved entirely for testing the smaller motors from 3 to 20 h.p. in size. The main floor will be used as a special department to produce the 40 h.p. Kermath motor since the demand for this has increased to such an extent as to make this necessary. In the new test rooms each engine will be placed under full load for a sufficient time to insure its being in first-class condition before shipment.

North East Electric Equipment

During the past ten years North East Electrical Equipment has been adopted for starting and lighting purposes by practically all important makes of motor boat engines. Two types of starting and lighting systems are furnished, a single unit combining both functions in one machine and separate units with two different machines. While this equipment is built to run with a minimum of attention at the same time some service is necessary on occasion. An extensive service organization for the North East Electric Co. with over 475 branches has been built up and the stations are located throughout the world. Steps have been taken to insure North East users against counterfeit replacement parts by packing all genuine parts in distinctive yellow containers prominently branded so that there may be no mistake as to their origin.

A New Book

All the Way By Water is the title of a new yachting romance which has just been published by the Penn Publishing Company of Philadelphia and written by Elizabeth



Kay, a new 35-foot runabout just completed by the Consolidated Shipbuilding Corporation for William J. Ehrich, from designs by Tams and King. She is fitted with a 150 h.p. model M Speedway motor

Stancy Payne. This book is a breezy nautical tale involving the owner of a 40-foot cruiser who has his vacation upset by a pretty girl in distress. There is nothing left for him to do but to accept the situation with which he is confronted and give her all the help he can. He embarks on a cruise to aid the girl which becomes a wild chase from one end of Long Island Sound to the other. There is the usual assortment of secret service men, buried jewels, gun-fights, and other exciting incidents. Familiar scenes are brought in to recall many pleasant hours.

A Correction

Due to an unfortunate error the address of The Disappearing Propeller Boat Company in the June issue of *MoTOR BOATING* was given as Boston, N. Y. Of course everybody knows that this address is not correct and that it should have been Buffalo, N. Y. The American plant at which these little boats with their disappearing propellers are built has always been at Buffalo and just now it is working to capacity to supply the demand for them. These little boats make a very popular family runabout for use at summer watering places.

Improved Lighting Units

Under the trade name of Steadfast the Harvey Machine Co., of Los Angeles, are

marketing an improved lighting unit adapted to serve as a non-battery or a battery charging system. Any generator and regulator is adaptable to either system since they are separate units. The regulator is mounted out of the grease and dirt where most accessible. The generator is simply a two-brush two-pole iron clad dynamo. Any manner of driving the generator can be adopted and either belt or friction drive pulleys with a spring tension base can be used. The regulator is an element which serves as a safety valve wherein the pull of a magnet is balanced by a spring. The voltage produced by the machine is a measure of the strength of the pull of the magnet and controls the current. By reason of this an automatic flexibility is assured which provides equally good results for both non-battery and battery charging systems.

Clutches That Clutch

For many of the smaller types of motor boat the necessity for a marine reverse gear does not exist. To provide a device which will enable these boats to idle their motor a one-way clutch has been devised by the E. J. List Manufacturing Co., Havana, Ill., which admirably serves every requirement for engaging and disengaging the propeller from the motor. The construction of this clutch is very simple but it has a powerful grip. It is perfectly balanced and will also run at any speed without vibration. In addition a metal adjustable shaft log is produced by this company which is adjustable to any desired angle. It is fitted with a packing box which will not tighten or loosen with the rotation of the shaft. These logs are desirable for new boats but can also be applied to old boats and provide a perfect watertight joint.

New Kermath Catalog

The Kermath Motor Co. have just issued a new catalog in which it will be found that the type of engine known as the separate engine plant has been entirely discontinued.

(Continued on page 57)



Photograph by E. Levick

Yard and plant of B. F. Wood, Inc., at City Island. For three generations, since 1860 to be exact, this old established firm has been building yachts and boats of all kinds. The "House of Wood," a name by which this firm is known, has long stood for excellence in fine yacht work. The present officers of the firm are B. F. Wood, Jr., president, and John A. Wood, treasurer, while Harley Davis Wood, of the new generation, is being trained to follow the footsteps of his ancestors

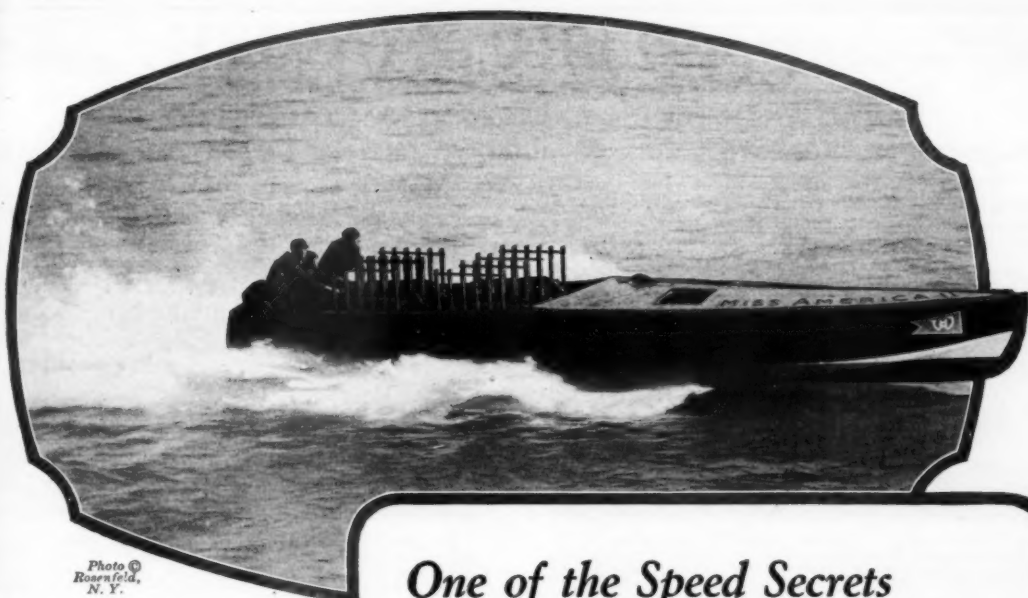


Photo ©
Rosenfeld,
N. Y.

One of the Speed Secrets Of Miss America II—

TWO International titles within two days is some record for one boat! But that is what Gar Wood's marine flyer, Miss America II, established.

On September 5th, last, Miss America II successfully defended the Harmsworth Trophy—defeating the British Challenger, Maple Leaf IV—over the Detroit River Course.

On September 6th, in a speed trial for the One-Mile Speedboat Championship of North America, this marvel attained a maximum speed of 80 miles per hour—4 miles per hour faster than the previous World's Record made by her sister boat, Miss America.

Both Miss America and Miss America II are products of the C. C. Smith Boat and Engine Company of Algonac, Mich. In a recent letter Mr. C. C. Smith says:—"All our boats are covered from keel to water-line with what sailors call 'pot lead.' We always mix this pot lead with Valspar because Valspar has such a wonderful water-resistance. I note from seeing other race boats that our boats look just a little better than someone else's—because Valspar seems to stand up so well under the weather."

And as might be expected all the bright work on Miss America II is

Valsparred, of course!

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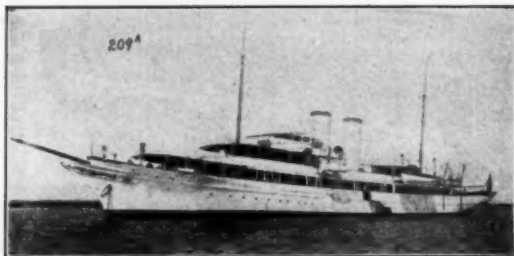
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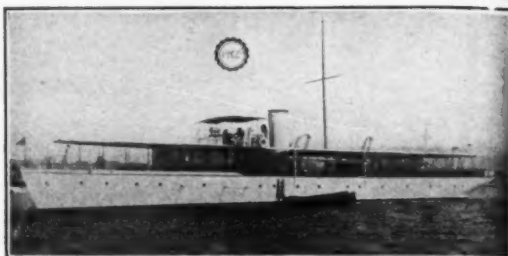
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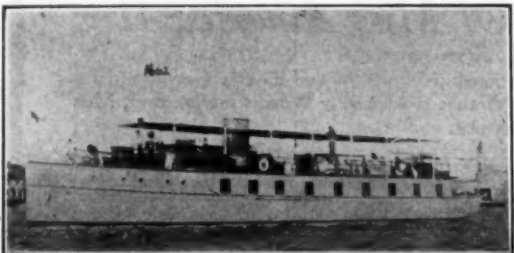
Genuine interest now shown in construction, purchase and charter of yachts of larger size is convincing proof that the tide has turned and prosperity is at hand. The war permanently removed many craft from yachting service, therefore, early arrangements are strongly advised if interested.



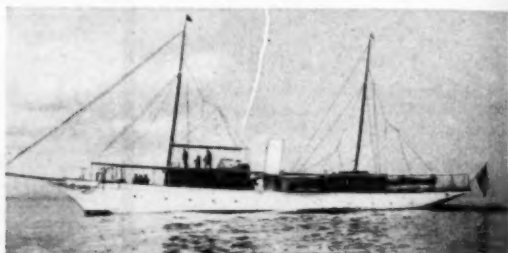
No. 209—For Sale or Charter—Large sea-going steam yacht. Exceptional speed. Palatial accommodation. Unusual opportunity. Several similar and smaller available craft. Cox & Stevens, 25 Broadway, New York.



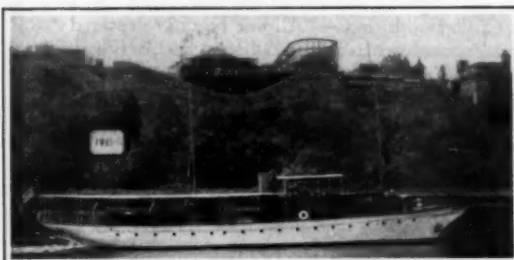
No. 1466—For Sale or Charter—Large and comfortable twin-screw steel cruising power yacht. Speed up to 17 miles. Dining saloon and social hall on deck; 3 double and 1 single staterooms. 3 bathrooms, etc. Handsomely fitted owner's quarters. Modern plumbing. Cox & Stevens, 25 Broadway, New York.



No. 1662—For Sale or Charter—Attractive 90 ft. modern power houseboat. All the comforts of a country home. Large saloon, four staterooms, two bathrooms, handsomely furnished. Cox & Stevens, 25 Broadway, New York.



No. 40—For Sale or Charter—Steel steam yacht; 140 x 17.6 x 7.6 ft. Lawley built, 12-14 miles; triple expansion engine; new main engine, boiler 1916, condenser retubed and furnishings renewed 1920. Deckhouses contain dining saloon, social hall; owner's stateroom, two beds; three guests' staterooms (one double); two bathrooms. Cox & Stevens, Cunard Building, 25 Broadway, New York.



No. 1993—For Sale—Twin-screw 98 ft. cruising power yacht. Speed up to 14 miles; 60-70 H.P. Winton motors. Deck dining saloon, 4 staterooms, 2 bath and toilet rooms. Hot water heat. Large deck space. Complete equipment. Cox & Stevens, 25 Broadway, New York.



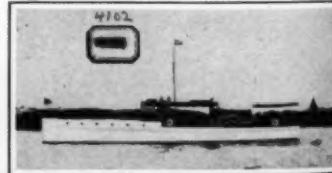
No. 1674—For Sale—Exceptionally attractive 84 ft. cruising power yacht. Speed up to 14 miles; 125 H.P. Standard motor. Dining saloon in deckhouse forward; two double and one single staterooms, bath and toilet room aft. Bargain for quick sale. Cox & Stevens, 25 Broadway, New York.



No. 353—Unusual bargain; 70 ft. cruising power yacht. Standard motor. Large saloon, double and single stateroom, bath and toilet room. Very able craft. In good condition. Price from Cox & Stevens, 25 Broadway, New York.



No. 4050—For Sale—High class fast 52 ft. twin-screw enclosed bridge deck cruiser. Speed up to 30 miles; two 8 cyl. 200 H.P. Speedway motors. Double stateroom, saloon with two pullman berths, toilet room, galley, etc. In commission. Price attractive. Cox & Stevens, 25 Broadway, New York.



No. 4102—For Sale at low figure—Fast 66 ft. twin-screw cruiser, new 1920. Speed 18-20 miles, two 175 H.P. motors. Forward and after cabins each with two transoms, two toilet rooms, galley full width of boat. Roomy bridge and after deck. Quick action advised. Cox & Stevens, 25 Broadway, New York.

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Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

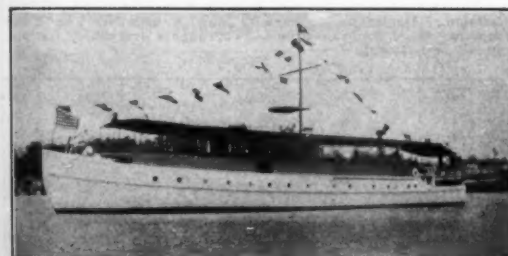
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats, on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat, upon request.



No. 7634—For Sale—Exceptional offering in Lawley designed and built cruiser, 43 ft. x 9 ft. 4 in. x 3 ft. 6 in. Double stateroom and saloon sleep 8. Steers and controls from deck saloon. 4 cylinder heavy duty Sterling motor. Speed 12-13 miles. Separate electric light generator. Built best materials regardless expense and all perfect condition. Fully equipped including tender. Able sea boat. Price reasonable. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.



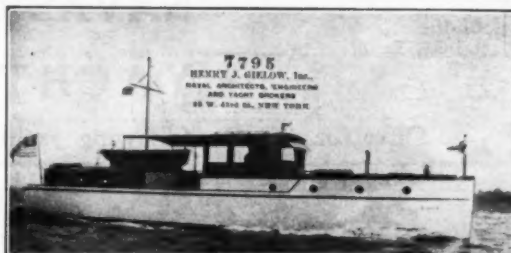
No. 8054—Located in Florida—Sale or Charter—Desirable 66 ft. cruising houseboat. One double and four single staterooms, bathroom. Large deck house containing lounging room. 50 H.P. motor. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



No. 8067—For Sale or Charter—Desirable twin-screw cruising houseboat suitable Florida and Northern waters. 88 ft. x 19 ft. x 3 ft. 6 in. 20th Century motors. Boat entirely overhauled and refitted 1920, three double and one single staterooms, saloon, deck saloon, sleep 8. Electric light and heating plants new 1920. Bath, two toilets. Has cruised Florida each year, good sea boat. Reasonable. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.



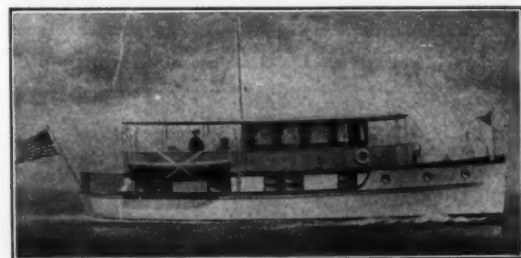
No. 7077—For Sale—Particularly desirable 80-foot twin-screw power yacht. "20th Century" 50-60 H.P. motors, new 1919. Deck dining room, two double staterooms, bathroom. All furnishings and equipment new 1919. Excellent condition. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 7795—For Sale—45 ft. bridge deck cruiser. Built 1920. Speed 12-14 miles. 100 H.P. Van Blerck motor. One double stateroom, main saloon with 2 Pullman berths, toilet room, galley, etc. Price attractive. Henry J. Gielow, Inc., 25 W. 43rd Street, New York City.



No. 7002—For Sale or Charter—Finest yacht of type available. 138 ft. twin-screw power yacht. Two 300 H.P. Standard engines. Dining room and social hall on deck; three double and one single staterooms; two bathrooms. All furnishings new 1920. Henry J. Gielow, Inc., 25 W. 43rd St., New York City.



No. 8177—For Sale—New houseboat cruiser completed spring delivery. 48 ft. x 13 ft. 6 in. x 3 ft. One double, one single stateroom, large saloon with two berths and deck saloon 12 ft. x 8 ft., sleeps six. Crew stateroom forward. Heavy construction, finished mahogany and cream enameled. Delco lighting plant, 40-50 H.P. 20th Century engine. All best workmanship. Speed 9-10 miles. Popular type for Florida and Northern cruising. Price reasonable based on present reduced building cost. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.



No. 8077—For Sale—Desirable cruising houseboat all in fine condition. Thoroughly overhauled 1921. Inexpensive New York. 75 ft. x 16 ft. x 3 ft. 6 in. Winton motor, 6 cylinder 70 H.P. Three large staterooms, large deck saloon; newly furnished, screened throughout. Heavily built, able sea boat. Speed 10-11 miles. Price attractive. Henry J. Gielow, Inc., 25 West 43rd Street, New York City.

TAMS & KING

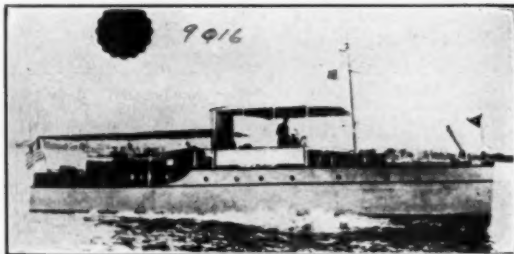
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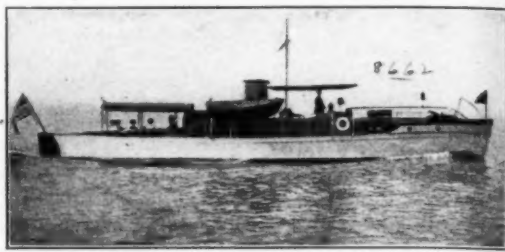
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YACHT BROKERS

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Offer for sale the following yachts, some of which are available for charter



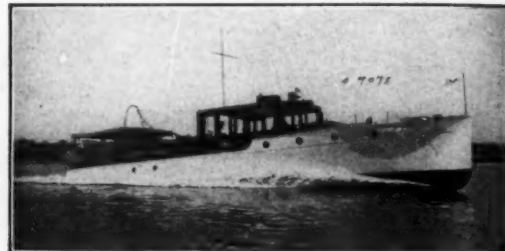
No. 9016—Sale—Charter—Desirable 60 ft. raised deck cruiser, thoroughly overhauled 1921. Two new 6 cylinder 90 H.P. Sterling motors.



No. 8662—Price Reasonable. Twin Screw 60 ft. fast cruiser. 2 90 H.P. Sterling motors. Inspectable Maine waters.



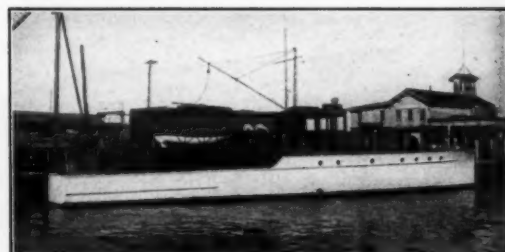
No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors. Speed 21½ miles. All modern conveniences.



No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled last year in all departments.



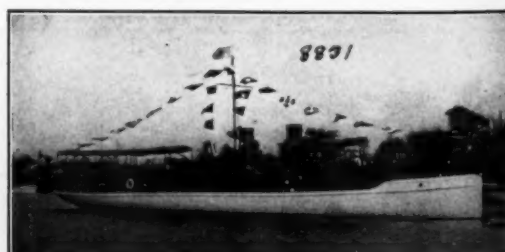
No. 8102—Sale—Charter—Most desirable raised deck cruiser available. Practically new. 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles. Electric light, hot water, heat and refrigerating plant.



No. 9075—For Sale—Desirable raised deck cruiser 70 ft. x 11 ft. x 4 ft. Good accommodations. Speed 23 miles.



No. 8978—For Sale—Raised deck semi-day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable. Full particulars and plans from Tams & King, 52 Pine Street, New York.



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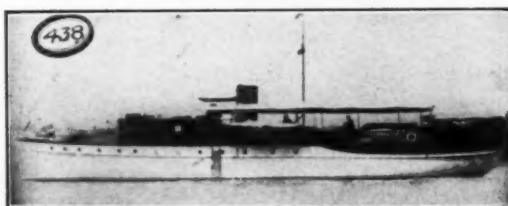
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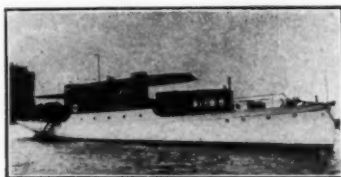
No. 1058—For Sale—desirable twin screw cruiser new 1921 93 ft. x 15 ft. x 5 ft. Powered with two 80-110 H.P. 6 cyl. Winton motors. Large deck dining saloon. Very commodious. Owner's double stateroom with large bath and dressing room. One double and single guest staterooms. Very attractively finished and equipped. Further particulars Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



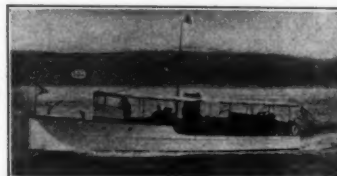
No. 438—For Sale—At a very attractive price. Twin screw cruiser 90 ft. x 15 ft. x 5 ft. heavily built of best materials and construction. Equipped with two heavy duty 20th Century motors. Deck dining saloon, very large deck space. Has two double and two single staterooms in owner's quarters, bath and two toilets. Very complete and the best of equipments. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



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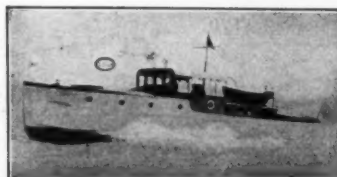
No. 1019—For Sale—60 ft. twin-screw express cruiser. Excellent seaboat. Speed up to 26 miles per hour. Accommodations excellent. Price reasonable. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



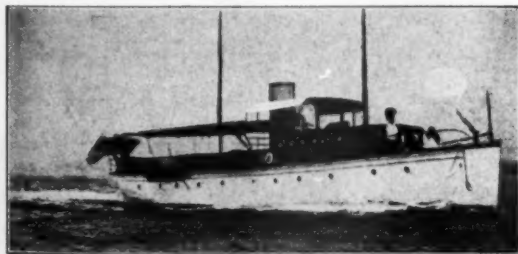
No. 1057—For Sale—Twin screw V-bottom Rochester cruiser. New 1921. 50 ft. x 12 ft. x 3 ft. Very complete and in excellent condition. Sleeps six comfortably in owner's quarters. Has comfortable deck-house and roomy after deck. Reasonable price. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



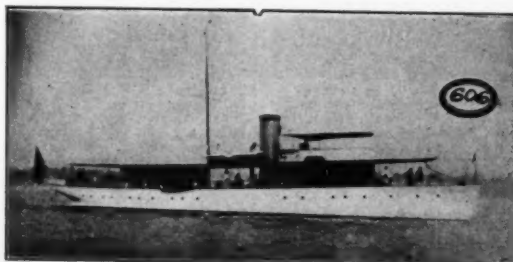
No. 173—For Sale—Very attractive bridge deck cruiser 55 ft. x 13 ft. x 4 ft. Powered with a 6 cylinder Sterling motor. Has large main saloon, forward double stateroom and bath in owner's quarters. Beautifully finished in mahogany. In excellent condition. Reasonable price. Henry C. Grebe & Co., Inc., 6 N. Michigan Ave., Chicago, Ill.



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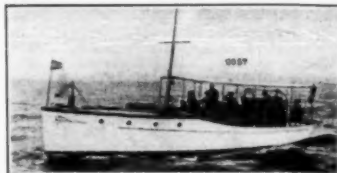
No. 4270—Keel Schooner; 105 ft. x 73 ft. x 18 ft. 6 in. x 11 ft. 3 in. Designed and built by William Fife, Jr. Built of teak. Hull coppered. Three double staterooms, main saloon, bath, etc. Splendid proposition. Excellent seaboat. Inspectable New York.



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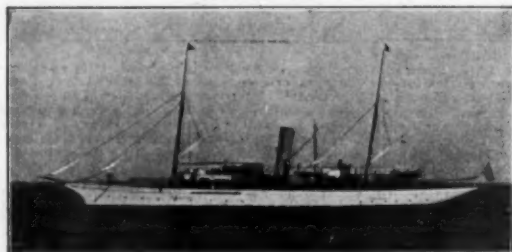
No. 2034—52 ft. express cruiser. Double stateroom, main cabin. Two toilet rooms, etc. 200 H.P. motor. Speed up to 24 miles.



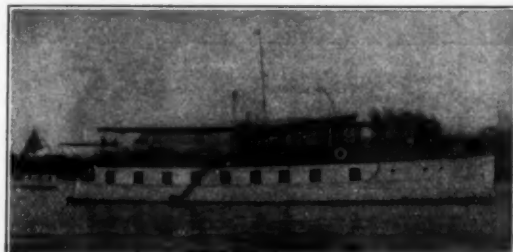
No. 2057—45 foot Elco Cruiser. Double stateroom, main cabin with two upper and two lower berths; two toilets; two berths and toilet in engine room. 32-37 H.P. Standard Motor; Electric lights, etc.

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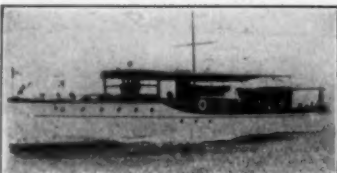
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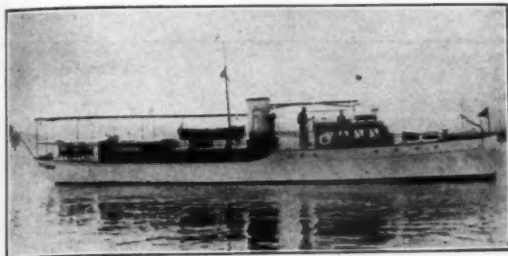
Naval Architects, Marine Engineers and Yacht Brokers

1 Broadway, New York

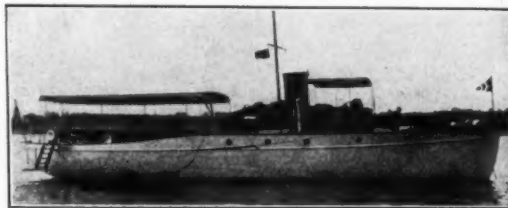
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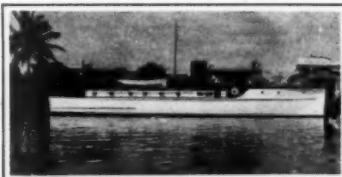
No. 2456—Excellent twin-screw power yacht, 72 ft. x 12.3; Lawley built, two 6 cylinder Wintons; speed 13 knots; two double staterooms, bathroom, dining saloon, etc.



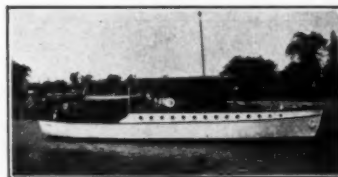
No. 1949—Able raised deck cruiser, 62 ft. x 12.9; new 8 cylinder Sterling motor; speed 13 1/2 miles. Single and double stateroom, main saloon, etc. In first class condition.



No. 1973—Able cruiser, 56 ft. by 12 ft., new 6 cylinder Van Blerck motor, installed 1920; double stateroom, saloon, toilet room, etc. Price attractive.



No. 2668—Express Cruiser, 62 x 11, built by Herreshoff Mfg. Co. Two 8 cylinder motors; speed 20-23 miles per hour. Double planked hull, etc. Trial granted.



No. 1614—Raised deck cruiser, 57 ft. x 13 ft., Twentieth Century motor, 50 H.P. Three staterooms, saloon, etc. A1 condition.

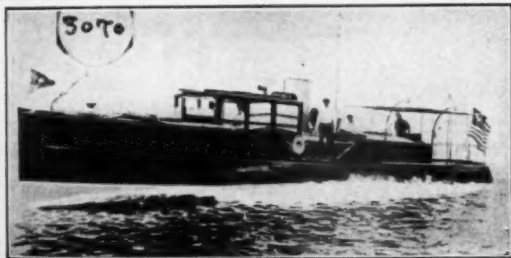
Telephone Vanderbilt 10499

Suite 401

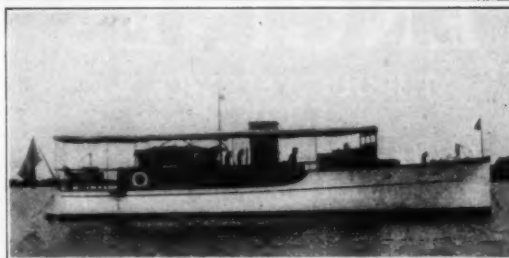
R. M. HADDOCK
NAVAL ARCHITECT and YACHT BROKER

50 East 42nd Street, New York

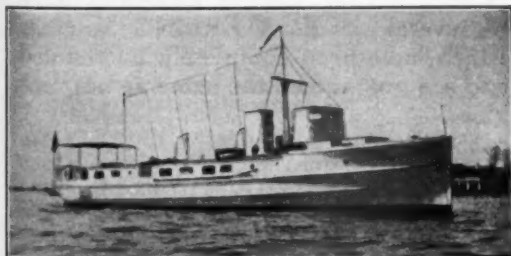
Marine Insurance



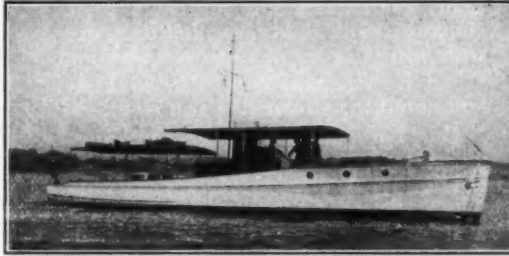
No. 3070—For Sale—Bridge deck express cruiser; 66 ft. x 12 ft. x 3 ft. 6 in. draft. Two Sterling motors. Speed up to 24 M.P.H. Ideal for fast ferry service. For further particulars, apply R. M. Haddock, Naval Architect and Yacht Broker, 50 East 42nd St., New York City.



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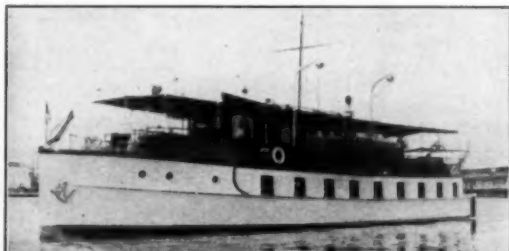
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Cable Address:
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HARRY W. SANFORD

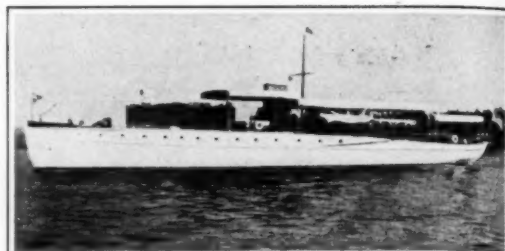
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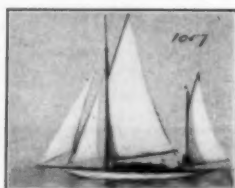
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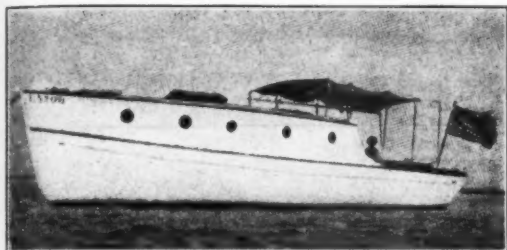
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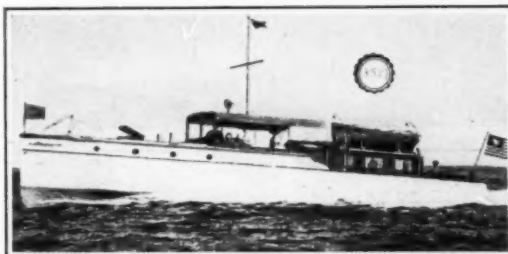
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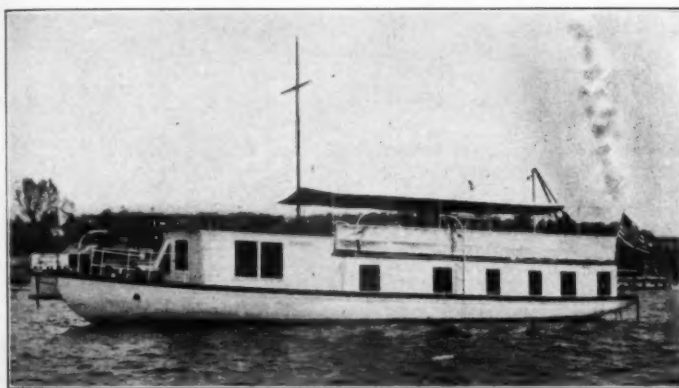
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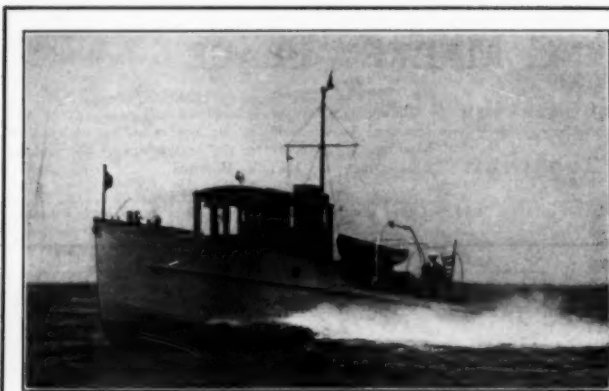
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For Sale

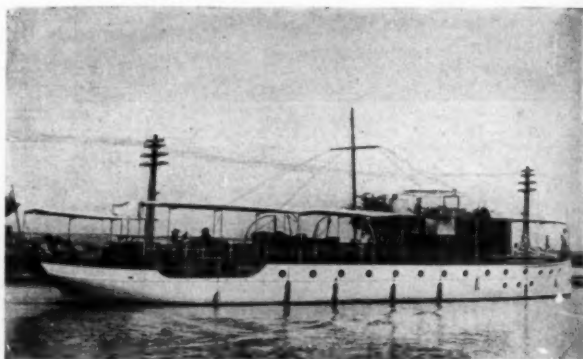
Very attractive twin screw V-bottom express cruiser, Hand design, new last season. Length 55 ft., beam 11 ft., draft 2 ft. 9 in. Two 6 cyl. Van Blerck motors, Delco lighting set, speed better than 25 m.p.h. Deck houses and all interior woodwork handsomely finished in mahogany. The accommodations forward consist of a cabin with berths for four, toilet room and large closets, next aft is a spacious well-equipped galley. The engine room is amidships between watertight steel bulkheads; two pipe berths, toilet and lavatory are provided here for the crew. The owner's room is next aft with a wide spring berth and transom, splendid toilet room and large closet. The roomy cockpit provides for a large party and the protection and cosiness of the enclosed bridge must be seen to be appreciated. White cedar and mahogany tender and full inventory included.

Will put in commission for purchaser within one week of date of sale.

Inspectable near Boston. B. T. Dobson, Naval Architect, Yacht Broker, New Bedford, Mass.



For Sale—Yacht 61 ft. x 11 ft. 6 in. x 3 ft. 9 in. Designed. Swasey. Builder, Jacobs 1916. Redesigned in 1919. Motors thoroughly overhauled in 1920. Two sterling eight cylinder motors 150/200 H.P. each. New power dinghy built 1920. In perfect order with complete inventory. Price low. Must be sold quickly. Oliver, 417 Canal Street, New York City.



For Sale to close an Estate—Twin screw Motor Yacht, 88 ft. o.a. Water Line 84 ft. 6 in., Beam 14 ft., Draught 4 ft. Two 4 Cylinder, 4 cycle Gas Engines. Located on Great Lakes at Hamilton, Ontario.
Apply to: G. R. Petrie, Burlington, Ontario.

Fay & Bowen 12 H.P., 2 cyl., 2 cycle engine, complete, \$75.00; Ferro 7 H.P., 2 cyl., 2 cycle engine and gear, complete, \$75.00; overhauled, tested and refinished; mufflers, carburetors, steering wheels, under water exhaust fittings, etc., one-fourth cost. One 30 ft. open boat with new 20 H.P. Kermath and electric starter, \$1,300. Will deliver in Lake Champlain. S. M. Henderson, Cleverdale, N. Y.

A bargain at Bayhead, New Jersey—18 ft. open boat, in good condition; 3½ H.P. Box 33, MoToR BOATING.

Limited number Improved type Erd 4 x 6 four cyl., 4 cycle, \$215; late model Doman heavy duty 5 x 6 four cyl., \$275. Representing new motors with high tension magneto ignition. Badger Motor Company, Milwaukee, Wis.

For Sale—A slightly used 4 cylinder medium duty J. V. B. motor complete with starter and generator. Owner is getting a larger motor and will sell for \$750. Rochester Boat Works, Inc., 10 Charlotte Sta., Rochester, N. Y.

Auxl. Cape Cod Fishing Trawler. Built 1906; 8 net ton; 28 ft. by 12 ft., 4 ft. cabin headroom; flush 16 ft. by 10 ft. cockpit; big fish hold; sound, tight seagoer; 24 H.P. 2 cylinder 2 cycle Lathrop with reverse and hoister make a fine boat for converting into auxiliary schooner or ketch; price (as is). E. V. ROSEMOND, 220 4th St., Greenport, N. Y.

Sell modern 40 ft. x 9 ft. Cruiser, 15 ft. cabin Sterling Engine 35-55 H.P.; all equipment, cushions, 4 willow chairs, flags, awnings, etc. In fine condition. Appointment. Rieger, 521 West 151 St., N. Y. C.

BOATS FOR SALE

For Sale—Runabout 30 Ft. long—48 H.P. Motor. A bargain—complete equipment. Send for photo and description. L. Biedinger, 2312 Adams Ave., Norwood, Cincinnati, Ohio.

For Sale—28 ft. trunk cabin cruiser, fully equipped for cruising with 12-16 H.P. Frisbie motor and tender. A-1 condition. John H. Scott, 22 Edgemont St., Springfield, Mass.

FOR SALE—One brand new four cylinder cycle Engine. Never been uncrated. Magneto ignition. Overhead valve. This engine is one of the highest priced and best engines of its type on the market. Will make an ideal medium heavy duty marine engine for 30 to 35 foot runabout or cruiser. Engine develops 40 H.P. at 1000 R.P.M. and 28 H.P. at 700 R.P.M. Price \$248.00 cash without Magneto. Box "31" MoToR BOATING.

For Sale—New and rebuilt marine engines. Write for list of bargains. Anderson Engine Co., 4032 No. Rockwell St., Chicago, Ill.

For Sale—Cruiser, bridge deck, 45 ft. x 10½ ft., Buffalo 4 cycle 4 cylinder motor, sleeps nine, \$1750. C. G. Ludvig, 16 Exchange Place, New York, Telephone Far Rockaway 1956.

For Sale—Launch 22 x 6, Seabury built, mahogany and oak, brass fittings. 4 H.P. Mianus motor, folding anchor mooring, winter cover, all first class. Complete \$350.00. Apply D. MacLean, 540 Columbus Ave., N. Y.

Honestly Rebuilt

Don't buy any motor until you have our latest price list of Masters Rebuilt Motors. Thoroughly overhauled, all worn parts replaced, refinished and guaranteed like new. All sizes. Lowest prices. Write to-day.

W. L. MASTERS & CO.

Largest Engine Dealers in Central West

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STERLING KERMATH UNIVERSAL FRISBIE

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HYDE PROPELLERS JONES REVERSE GEARS



For Sale—C. P. & D. 25 ft. Hand V-bottom runabout, speed 30-35 M. P. H. Hall-Scott 125 H.P. Marine motor. Price \$3,500. A. C. Smith, Jr., 207 N. Calvert Street, Baltimore, Maryland.



Trustworthy Motors Only—Straightforward One Price—Exactness of All Statements

MARINE ENGINE CO OF PHILADELPHIA

Authorized Distributors for

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Wright Reliable Engines
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Gray Motors, 2 & 4 cycle
Sturdy Motors
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Unimote 2 K. W. Electric
Plant
Universal 4 K.W. Generating
Set
Hyde Propellers

THIS company has been organized to handle the sales and service in Philadelphia and surrounding territory for a representative line of high-grade marine engines and allied marine products.

Ampley financed and well equipped by years of experience, the Marine Engine Company of Philadelphia promises maximum service and satisfaction alike to the manufacturers it represents, and to the boat owners, marine engine buyers and boat builders of its selling territory.

Complete stocks of engines are carried on hand for prompt delivery, including spare parts for same. Serviceable engines will be accepted in trade and thoroughly rebuilt before reselling with a full year's guarantee.

REBUILT ENGINES

Standard, Sterling, Van Blerck, Peerless, Kermath, Gray, Hall, Loew Victor, Vaughn, Automatic, Universal and many others, from 2 H.P. up.

Write today for latest complete list with prices

All engines taken in trade are thoroughly overhauled, honestly rebuilt and **GUARANTEED** for **ONE YEAR**.

We want you to get acquainted with our facilities to serve you. Come in and get acquainted.

Marine Engine Co. of PHILADELPHIA

H. H. Kramm, President
D. C. MacNeill, Treasurer
H. B. Foster, Secretary

BOURSE BUILDING
Philadelphia, Pa.

Don't Forget 1926 Sesqui-Centennial.

We will be there with the products of the manufacturers we represent.

PURPOSE

To celebrate the One Hundred and Fiftieth Anniversary of the signing of the Declaration of Independence, by holding in the City of Philadelphia, in the State of Pennsylvania, an exhibition of the progress of the United States in art, science, and industry, in trade and commerce, and in the development of the products of the air, the soil, the mine, the forest and the seas; to which exhibition the people of all other nations shall be invited to contribute evidences of their own progress, to the end that better international understanding and more intimate commercial relationships may hasten the coming of universal peace.

"The HOUSE of WOOD"

Three Generations of Boat Builders

Sail or Power

The traditions of three generations of quality boat building—the record of producing many of the finest and fastest sail and power yachts ever built—the facilities and experience developed during sixty-two years—the most convenient marine location in the vicinity of New York—these factors insure your complete satisfaction if your boat is built by the "House of Wood".

We have had the honor of building for some of the most prominent yachtsmen of the past and present, and number among our regular customers several of the foremost naval architects.

Several six-metre yachts have been built or are under construction at our yard for the International Races to be held in September.

Let us figure with you. A history of the "House of Wood" will be mailed on request to those interested in new boats.

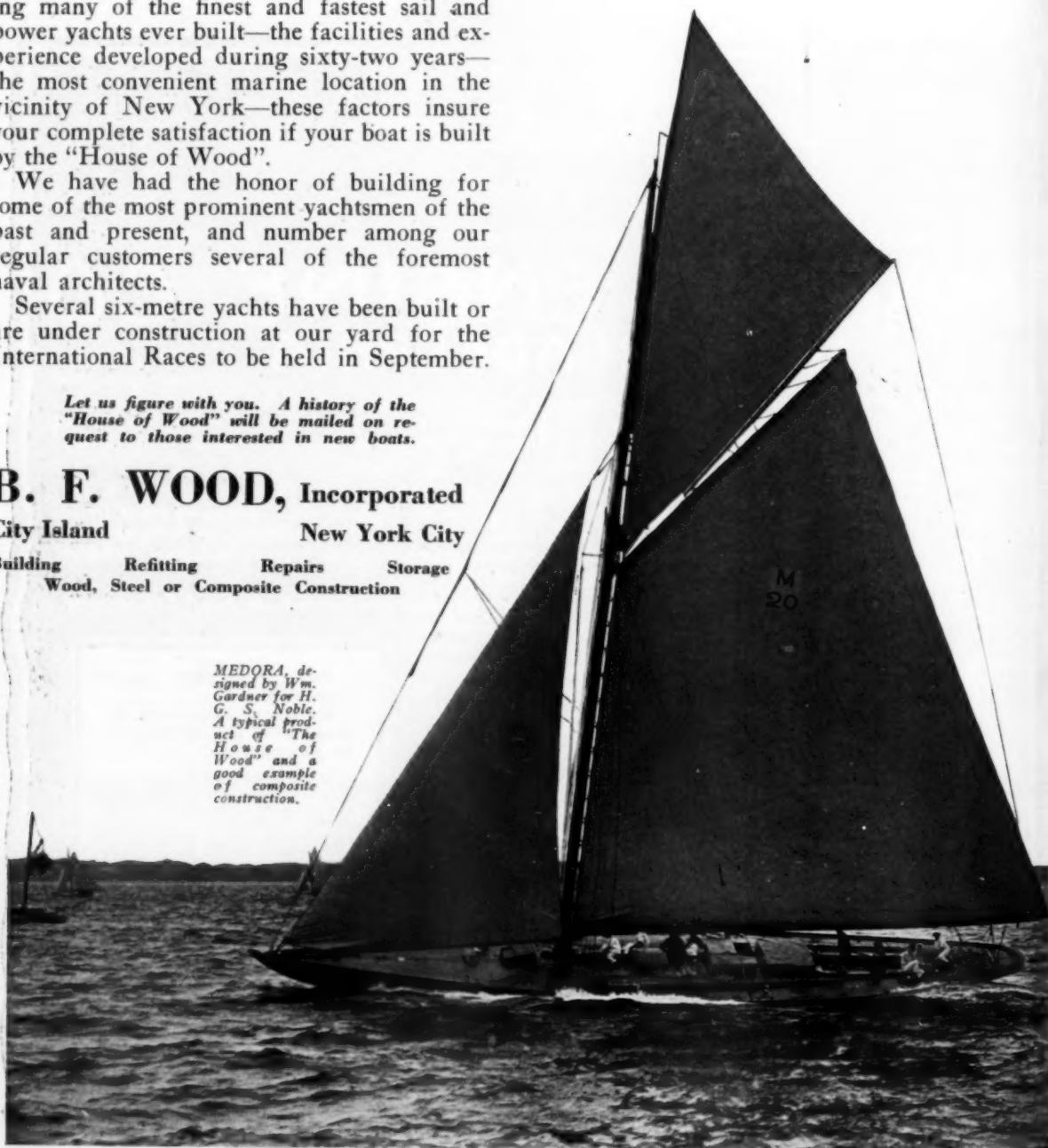
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Building Refitting Repairs Storage
Wood, Steel or Composite Construction

MEDORA, designed by Wm. Gardner for H. G. S. Noble. A typical product of "The House of Wood" and a good example of composite construction.



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ENGINEER

18 years experience, steel and wood construction with
leading yacht designers and U. S. Navy.

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I charge a fixed price for my services; not a per-
centage of cost. This, with my knowledge of the
market, insures a maximum of value at minimum
cost. In justice to yourself, let me submit a sketch
of your requirements.
2830 Kansas Road, "Fairview", Camden, N. J.

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Designer of Sailing Craft, Aux-
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Every design, now as always, my personal work.
Send stamp for catalog illustrating forty-three typical
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Yacht Broker Sales and Chartering
80 East 42nd St. New York City

FREDERICK K. LORD

NAVAL ARCHITECT

120 BROADWAY NEW YORK

Yard and Shop

(Continued from page 44)

This older type machine was originated some twelve years ago and differed from the regular models in the type of crankcase. The option of four different types of ignition has also been reduced to only two types and today Bosch Magnetos and a battery system are sufficient. These changes have been made to effect a closer standardization of the engines. The unit power plant has been found to be the proper type of engine for installation in any boat to get the best results. Copies of this catalog will be sent to interested readers of *MoToR BOATING* by addressing the Kermath Company at their new address, 5890 Commonwealth Ave., Detroit.

High Grade Binoculars

The Spencer Optical Company, 5 Maiden Lane, New York, N. Y., have imported a large number of fine foreign marine glasses which they are prepared to dispose of at unusually moderate prices. These glasses make exceptionally fine prizes for boat races and any clubs in need of prizes of this kind will do well by getting in touch with this company. By reason of their ability to deal directly with the manufacturers abroad the quality of the glasses offered is vastly in excess of the prices quoted.

A New Consolidated Runabout

Occasionally we find a runabout which has been carefully designed and staunchly built as is more customarily done in the cruiser class. An example of this, the new runabout Kay just completed for William J. Ehrich shows what can be accomplished. This boat, 35-feet in length, was built by the Consolidated Shipbuilding Corp. from designs by Tams and King. In addition a 150 h.p. model M Speedway motor is used for power. These motor units are being used more and more by designers all over the world where the finest type of marine engine installations are required. Kay swings a 24 by 24-inch Columbian wheel and develops a speed of over 25 m.p.h. She is built of mahogany, double planked on an oak keel with three watertight bulkheads. The boat handles from the steering wheel, all controls, switches, etc., being brought to this point. The cockpit is covered with an ingenious folding top which one man can handle. Kay will attract considerable attention since it is one of the sportiest runabouts of the season.

Waterford Jolly Boat

A new little boat of the disappearing propeller model has just been announced by the Disappearing Propeller Boat Corp. of Buffalo. This boat is made in 12-foot length, of cypress planking throughout and copper riveted and fastened. It will make an excellent dinghy or tender for the yacht or houseboat and the disappearing propeller feature will make it a general utility craft for all occasions. The disappearing propeller is automatically raised into its housing when it comes in contact with a sand bar or submerged obstacles permitting the boat to land on a beach whether it be sandy or rocky. It can also be driven in shallow waters or other places where only a light skiff could be navigated otherwise.

CHARLES D. MOWER

Designer of

**SENSIBLE CRUISERS
POWER—SAIL—AUXILIARY**

Twenty-five years' practical experience
380 Madison Avenue New York City

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Yacht Builder, Marine Railways,
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River Street, ATLANTIC, MASS.

Designer of high grade wood and steel,
Steam, Motor, Auxiliary and Sailing
Yachts and Commercial Vessels.

18 years' experience. Stock plans.
Phone Granite, Mass., 1011 or 2599-M

Elto Wins Race

In a race of little boats powered with outboard motors, five were equipped with Elto light twins. These all finished far ahead of the other contestants, many of which were provided with larger, single and double cylinder motors. Only boats of the exact same type and size were qualified to enter. The course was fourteen miles in length, and in spite of a three-minute handicap the Elto motors were soon setting the pace. The winner, S. Kaiser, with an 18-foot Thompson boat, made a pretty race of it all the way. For his efforts he was awarded a handsome cup 16 inches high. The second and third boats to finish were also powered with Elto motors and their owners awarded cups. This is the second outboard motor race held at Houston, Texas, and in the first one last March, Elto motors also took the first prize. Much interest is being displayed in these races and keen rivalry has developed among the boatmen.

Radio for Yacht Clubs

A great many yacht clubs and hotels have discovered that there is no more interesting and economical means of entertainment than the radio concerts. With the number of stations broadcasting this entertainment steadily increasing, and the character of the entertainment daily becoming more varied and original, the demand for equipment with which to receive this entertainment is still very strong. The Griffin Radio Service Inc. is prepared to take over the entire installation and equipment of yacht clubs so that this entertainment may be received and properly handled.

Black & Decker Open Detroit Office

The Black & Decker Mfg. Co., builders of Portable Electric Tools, announce the establishment of a new Detroit Office in the General Motors Building. C. G. Odell, Assistant to President, of The Black & Decker Mfg. Co., will use this office as his base, in addition to which it will provide headquarters for the local Detroit representative.



**Motor boats run best on the
powerful and sustained igni-
tion current of a Columbia
"Hot Shot" Dry Battery**

Simplicity, long life, high power, low cost, and ease of obtaining when needed—these remarkable features combined are what make a Columbia "Hot Shot" Dry Battery superior for all motor boat ignition and lighting.

No machine parts to keep tinkering with, or to call for expensive replacement. No cell connectors to jar loose. Full power at starting, when you need it most.

Just one single solid package of pep that lasts long, and is obtainable everywhere at little cost

Columbia Dry Batteries for all purposes are for sale everywhere at marine supply houses; electrical, hardware, and auto accessory shops; garages; general stores.

Insist Upon Columbia

NATIONAL CARBON COMPANY, Inc.
LONG ISLAND CITY, N. Y.

ATLANTA CLEVELAND CHICAGO
KANSAS CITY SAN FRANCISCO

**Columbia
Dry Batteries**
— they last longer

**Canadian Vickers, Ltd., to Build
Sea Sleds**

Of interest to the motor boating fraternity is the fact that Canadian Vickers, Ltd., of Montreal, Quebec, Canada, are entering on the production of motor boats in considerable quantities. After a very thorough investigation of the field the Sea Sled type has been adopted by that concern, and they are now engaged in standardizing several sizes of Sea Sleds, those sizes to be placed into actual quantity production.

The arrangement has been made whereby Canadian Vickers, Ltd., have become stockholders in The Sea Sled Company, Ltd., of Montreal, and will exercise sole manufacturing and selling rights of Sea Sleds in Canada.

The first Sea Sled model to be placed in actual quantity production by Canadian Vickers is the new Sea Sled dinghy, and deliveries are now being made on this popular model from their Montreal works. A 40-foot demonstrating runabout of Sea Sled design is being constructed by them at Montreal, and is equipped with GRS 6-cylinder Sterling motors. This boat is to be sent into all of the motor boating centers of Canada to demonstrate the remarkable qualities of Sea Sleds, and will be much in evidence at the different regattas both on the American and Canadian side of the border this coming season.

This combination of Canadian Vickers, Ltd., with The Sea Sled Company, Ltd., of Montreal, effects one of the strongest combinations that could be possibly brought into the motor boat industry. Canadian Vickers, Ltd., are unquestionably the largest shipbuilders in Canada, and the records made by them in the complete building of large and small vessels alike gives indications of the tremendous possibilities of that same concern in the production of Sea Sleds.

As evidence of the remarkable strength of this new combination, it is interesting to note the Board of Directors of The Sea Sled Company, Ltd., of Montreal, a board showing men of remarkable ability and internationally well known.

Albert Hickman, President and Managing Director.

C. R. Hosmer, President, Ogilvie Flour Mills Co., Ltd., Director Bank of Montreal; Director, Canadian Pacific Railway; Vice-President, Laurentide Company, Ltd., Director, Dominion Textile Company, Ltd.

Lt.-Col. Herbert Molson, C.M.G., M.C., President, Molson's Brewery, Ltd.; Director, Bank of Montreal.

W. A. Black, Vice-President and Managing Director, Ogilvie Flour Mills Co., Ltd.; Director, Molson's Bank; Director, Abitibi Pulp & Paper Co., Ltd.

G. W. McConnell, President, St. Lawrence Sugar Refineries, Ltd., Vice-President, Montreal Tramways & Power Co., Ltd. Hon. W. J. Shaughnessy, K. C., Director, Canadian Pacific Railway; Canadian Salt Company, Ltd.

A. R. Gillham, Vice-President, Canadian Vickers, Ltd.

Henry B. Plant, Capitalist and yachtsman of New York City, son of the late Commodore Morton F. Plant.

The Sea Sled Company of West Mystic, Conn., manufacturers and designers of these boats in this country have in the past year undoubtedly made more remarkable advances in this new type of boat than has been made in any other type of boat in a corresponding short period. These advances coming so fast have possibly been lost sight of, and can be well brought to attention now. Within the past 18 months the following remarkable Sea Sleds have been designed and built by The Sea Sled Company in this country:

Orlo II, a 36-foot seaworthy runabout that was shipped to Florida in the early winter of 1921, raced there in the Fisher-Allison Trophy Races, a boat that despite its much greater size and weight-carrying ability succeeded in shattering all world's records had to that time for displacement boats, and creating a new record of 47 statute miles per hour.

Marathon, a 30-foot seaworthy runabout constructed for Mr. Henry B. Plant for his use as a fast ferry and all-around boat on Long Island Sound, a boat that, equipped with two 6-cylinder, 200 H.P. Hall-Scott motors, consistently showed speeds with a great number of passengers of over 40 M.P.H. in very bad weather, a boat that as a fast runabout showed speeds of from 47-48 M.P.H. This is the same boat that this Spring made the record run from New London, Conn., to Atlantic City, N. J., outside in the open Atlantic of 180 nautical miles in six hours running time.

Orlo III, a Sea Sled that at Buffalo, equipped with two Murray & Tregurtha, 200 H.P. motors, created the present world's records for displacement boats on the one mile speed trials of 57.799 statute miles per hour, on the 2 mile lap with one-buoy hairpin turn of 41.6 statute miles per hour, and the record for 50 mile race, 2 mile course with hairpin turns of 39.8 statute miles per hour. This is the same boat that at Detroit during the Wood-Fisher Trophy Races, equipped with two Liberty motors, made the new 2½ mile lap record with four-buoy turns of 47.11 statute miles per hour. These are all displacement boat records, and are remarkable when one considers the facts that the Sea Sleds making them are large, seaworthy runabouts, and not racing craft in any sense of the word.

(Continued on page 76)

HALL-SCOTT

MARINE ENGINES

for Runabouts and Cruisers

IT isn't necessary to build a racing boat in order to enjoy the superior service of a Hall-Scott Marine Engine. Any good runabout or cruiser hull that is staunch enough to stand the buffeting of 20 to 30 miles an hour will be a better boat, a faster and more economical boat when a Hall-Scott is installed.

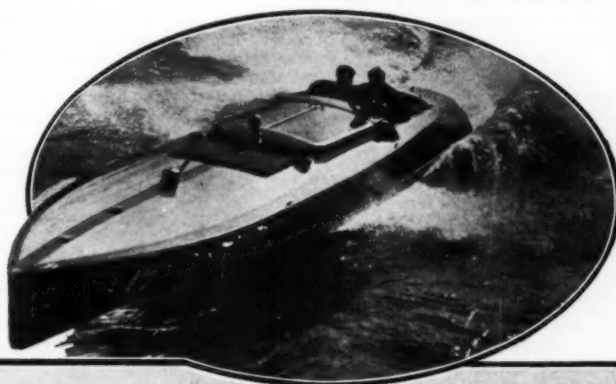
Hall-Scott Marine Engines are built for all-day every-day service in substantial, serviceable pleasure craft. They are built to give the reliability and fuel economy you expect from a medium duty or heavy duty engine, without sacrificing the thrilling boat speed that makes riding in a fast boat so exhilarating.

A Hall-Scott owner expressed it aptly by saying he found his Hall-Scott a "heavy duty high speed engine." We call it a high duty engine because it is built throughout to stand up under continuous maximum loads at 1200 to 1800 r.p.m. Hall-Scott powered runabouts make 20 to 48 miles per hour—cruisers, 15 to 35 miles per hour.

Let us tell you just what to expect of a Hall-Scott Marine Engine in the type of boat you prefer. Write for descriptive catalogs.

Single and Twin Screw Plants in Stock at
HALL-SCOTT MOTOR CAR CO., Inc.
 Eastern Sales & Service Branch
 887 Niagara St., Buffalo, N. Y.
 Factory, Berkeley, Calif.

"NICK NACK"—World's fastest displacement runabout, powered with a single marine engine. 200 H.P. Hall-Scott



The boat at the right is "WINIFRED" the fastest cruiser on the Pacific Coast. 43 ft. x 10 ft. Speed 30.9 M.P.H. Two 6 cyl. 200 H.P. Hall-Scotts



When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating, 119 West 40th Street, New York

Yard and Shop

(Continued from page 57)

Novel Guarantee

A new 1922 edition of their marine accessories catalog has just been issued by the E. J. Willis Co. of New York. A surprising statement appears in which they guarantee to ship immediately from stock any articles listed in the catalog with the exception of a few special items which require processing to dimensions or otherwise. For many years one of the principal drawbacks to purchasing accessories has been the delay following orders by mail. If the Willis Company lives up to its guarantee it will certainly be a boom to the motor boatman. W. E. Willis the Vice-President of the company has stated that the season's business has been very closely estimated and stocks in ample volume have been laid in. Carefully planned bins have been constructed which will be kept full of merchandise at all times.

E. J. Willis Company have been appointed Eastern representatives for the Bryant and Berry Propeller Company and will carry a complete line of sizes of these famous wheels for immediate delivery. It will no longer be necessary to send to Detroit for these wheels as ample stocks will be carried in New York.

The Importance of Correct Lubrication

The Vacuum Oil Company of New York, refiners of the well-known brands of Mobiloil have just issued a booklet entitled the Correct Lubrication for Motor Boat Engines. The essentials of a marine engine, speed and reliability, are entirely dependent on correct lubrication, and this little booklet describes the proper way to take care of all types of machines. Such features as the cause of carbon deposits and their relation to the grade of oil used are discussed at length and it will be to the advantage of every motor boatman to secure for himself a copy of this valuable booklet. The New York office of the Vacuum Oil Company, 61 Broadway, will be pleased to supply a copy of this booklet to MoToR Boating's readers.

Marine Distributors for Stearns Motors

In order to properly distribute the Stearns Marine Motor in all localities in the United States and Canada the following distributors have been announced by the company. For New York and vicinity: Bowler, Holmes & Hecker Co., Inc., 259 Greenwich St. For Canada: Walter Dean Canoe & Boat Co., Toronto, Ontario. For Northern Illinois, Missouri, Wisconsin, Minnesota, Iowa, counties in Indiana bordering on the lake: W. L. Masters & Co. 229-231 N. State St., Chicago. For Southern California: Fellows and Stewart, Inc., Wilmington. For Washington & Alaska: H. G. McLaughlin Co., 809 Railroad Ave., Seattle. For Lake Erie territory from Conneaut to Toledo and interior of Ohio south to Columbus: W. F. Meier, 1433 W. 77th St., Cleveland.

Seacraft Corporation

A reorganized company which will go into the building of high class runabouts and express cruisers has been formed at Wilmington, Cal., and called the Seacraft Corp. Dustin Farnum, one of the most popular power boat enthusiasts in the country, is on its directorate and is having built a new 31-foot Hacker hydroplane. It is intended to develop all kinds of motor boating in the Southwest, where the climate is ideal the year around. William Lambie, who is at present in New York for the firm, is their naval architect. Harry Carlson will be the shop superintendent, while H. O. Shuster is manager.

The Standardized Boat

The progress of standardization is such that a high grade boat has been made possible at a moderate price. The Harrison Boat Works, of Toledo, Ohio, is building a Standard cruiser in 31-foot length equipped with all conveniences for comfortable cruising. The boats are built in both single and double cabin models and allow of sleeping accommodations for six persons. The power plant in the Harrison boat is a standard electric starting 40 h.p. Kermath Motor, which is conveniently located under the bridge deck.

New Kermath Dealers

J. V. Farr, the Sales Manager of the Kermath Manufacturing Company, has just returned from a trip in which he has placed the agency for Kermath motors with the St. Lawrence Engine Company at Brockville, Ontario and also with Robert Cranker at Alexandria Bay, New York. These dealers will have engines in stock ready for delivery in the spring. At Clayton, New York, The Crescent Motor Boat Company are building some new boats all of which are to be equipped with Kermath motors.

Frisbie Recommendations for MoToR Boating's Deed Design Cruisers

Because of the number of inquiries that the Frisbie Motor Company, of Middletown, Conn., have been receiving, asking which of their motors is best suited for installation in the several designs of W. J. Deed's Cruising Boats, which have been especially published for the readers of MoToR Boating, that company has figured out recommendations for the several boats which follows:

In Chum, featured in the January issue, the 1 cylinder 5 H. P., or the 1 cylinder 7 H. P. motor.

In Nomad, of the February issue, the 3 cylinder 18 H. P., 3 cylinder 25 H. P., or the 4 cylinder 40 H. P. motor.

In Porpoise, featured in the March issue, 1 cylinder 5 H. P., 1 cylinder 7 H. P., or 2 cylinder 10 H. P. motor.

In Shrimp, April design, the 2 cylinder 10 H. P., 2 cylinder 16 H. P., or 3 cylinder 18 H. P. motor.

In Dolphin, of May, the 3 cylinder 18 H. P., 3 cylinder 25 H. P., or 4 cylinder 30 H. P. motor.

Nautilus of the June issue, the 3 cylinder 18 H. P. motor.

Penguin, of July, 1 cylinder 5 H. P., 1 cylinder 7 H. P., or 2 cylinder 10 H. P. motor, in which design the engine will probably be without Reverse Gear.

Whale, of August, the 1 cylinder 7 H. P., 2 cylinder 10 H. P. motor.

In Sea Gull, of the September issue, the 2 cylinder 16 H. P., 3 cylinder 18 H. P., or 3 cylinder 25 H. P. motor.

In Tarpon, of October, the 2 cylinder 16 Horse Power, 3 cylinder 18 H. P., or 3 cylinder 25 H. P. motor.

In Alligator, of November, the 2 cylinder 10 H. P., 2 cylinder 16 H. P., 3 cylinder 18 H. P., or 3 cylinder 25 H. P. motor.

In Mud Turtle, of December issue, the 2 cylinder 16 H. P., or the 3 cylinder 18 H. P. motor. In this boat the installation of transmission would be driving the stern paddle wheel through a worm gear.

The readers of MoToR Boating interested in any of the Deed design boats which have been run in this magazine are at liberty of getting in touch with the Frisbie Motor Company and securing more information regarding the motor for the particular boats. The fact that different Frisbie motors could be used in any of these boats is because the power plant would vary with the conditions under which the boat would be used, and the amount of speed desired, etc.

The Frisbie Motor Company will be very glad to give to the readers of MoToR Boating the advantage of their engineering experiences in making final recommendation on any of the boats in question.

Changes in Philadelphia Branch

Bruns, Kimball & Co. wish to announce that beginning March 20th, 1922, T. H. Travis will be chief salesman of their Philadelphia office and show room. It is to be remembered that Mr. Travis was for a period of possibly seventeen years production manager of the Palmer Engine Co. of Coscob, Conn., and later was production manager and vice-president of the Frisbie Motor Co. of Middletown, Conn. Mr. Travis' experience in the marine engine field dates back to a time when the industry was in its infancy and Bruns, Kimball & Co. are to feel very fortunate in securing a man with the experience of Mr. Travis.

The company still distributes from their Philadelphia office the same line of high grade marine machines as formerly and Mr. Travis' experience with the Frisbie Motor Co. makes him particularly valuable to motor boat enthusiasts in or around Philadelphia. They will find him a gentleman always ready and willing to assist with any of the technical problems which come up, and motor boatmen are cordially invited to call upon him at any time in the Bruns, Kimball & Co. exhibit at the Bourse Building, Philadelphia. The machines which Mr. Travis will distribute are as follows—Sterling, Wolverine, Kermath, Peerless, Doman, Universal, Regal, Murray & Tregurtha, besides a stock of some three hundred rebuilt machines, which the company keeps on display in New York City.

Evinrude Prices Reduced

The Evinrude Motor Company, Milwaukee, Wisconsin, announces a reduction in prices on all Standard Detachable Rowboat and Canoe Motors, as well as Inboard models. It was possible to do this by reason of the increased production which makes the cost of manufacture come down and the price reduction possible. The four to five-horsepower inboard model which has been awaited for several years is also possible now and quantities of these will be built. In the expectation that the coming season will be bigger than any that have preceded it the officials of this company are planning on a large output.

Prompt Deliveries**EXPRESS TYPE**

**Seaworthy
Dependable
Low Cost**

THE **"Gar Jr. Flyer"**

**A Guaranteed
30-Mile Commuter**



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Exclusive Sales Agents: COX & STEVENS, NEW YORK.

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PRESENT-DAY conditions, due largely to burdensome taxation, have made it imperative to develop a comparatively small practical power boat which embodies sustained high speed (not less than 30 miles per hour without vibration), seaworthiness, reliability, low initial and operating costs, as a substitute for the large oil-burning turbine yachts of the WINCHESTER type designed by us and used as a daily ferry.

After careful investigation we have found the substitute. Our close observation and thorough tests of the GAR JR. II (illustrated herein), developed by the famous Gar Wood, holder of practically all motor boat speed records, has convinced us that this particular craft embodies all the essential qualities required in a successful commuter boat. For the past two seasons the GAR JR. II has with ease beaten all her competitors, whether racing in sheltered waters or in the open sea, and her power plant has never failed for one moment to function perfectly,—a remarkable record one must admit!

We have accepted the exclusive agency to market duplicate craft built in highest class manner, with improvements in profile, exterior and interior arrangements, and up-to-the-minute mechanical features. This new type has been designated the GAR JR. FLYER.

For price, delivery and further particulars, apply to

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With each new boat, we will furnish a trained engineer,—also a speed guarantee from the Builder.

Here is a 50-ft. motor yacht, which can if required sleep four people for short trips, demonstrated speed far in excess of that guaranteed, with seagoing qualities that have enabled the GAR JR. II to make records from Miami to Palm Beach, from Miami to Havana, from Havana to Key West, from Key West to Miami, and from Miami to New York, all in the open sea, that have never been equalled by any boat of moderate size and cost.

The motive plant as installed by Gar Wood is practically automatic in its operation, absolutely reliable, and the control is perfect. The engineer and steersman, standing on the bridge at the wheel, has the same control of this boat as the chauffeur in a modern motor car. In other words, we are offering to the public a "Water Automobile" with practically the speed of a motor car and with the comfort and freedom from dust, bad and congested roads.

News Notes

Clubhouse to Be Completed in June

On June 15th, the attractive new \$53,000 clubhouse of the California Yacht and Motorboat Club, facing the east basin at Los Angeles Harbor, California, will be completed and ready for occupation, according to Edwin Bergstrom, the architect and designer.

The building has been planned by Mr. Bergstrom so as to afford all the facilities of a modern clubhouse. The central feature will be the big lounge room, thirty-five by eighty-five feet. An attractive dining room, with the necessary complement of kitchens, is included in the plans, as well as men's and women's rest rooms and sleeping accommodations, with baths, for thirty-five guests.

Another feature will be the big observation tower, rising to a height of eighty feet above the water level, from which a panoramic view of the harbor can be had. On the side of the building toward the harbor, a big concrete landing barge will be installed, so as to facilitate the landing of motorboats and yachts directly at the clubhouse. A modern garage, with accommodations for forty cars, will be built, and additional parking space for one hundred machines will be afforded. The entire project, according to Mr. Bergstrom, will represent an investment of approximately \$100,000, including building, site, furnishings, etc.

The clubhouse will be one of the finest in appointments on the Pacific or Atlantic coasts and will be one hundred and forty-four feet long and eighty-four feet in width, and be partly one story and partly two in height.

The skippers are anxious that an intensive spring warfare be conducted to drive the mosquitoes out of the harbor, so the harbor board has authorized the employment of one additional mosquito exterminator to assist the present one, Edward Field, who is in charge of this work. As the mosquito warfare department has battle equipment of one automobile and a boat, it is expected that with additional help allowed the war will be prosecuted vigorously on land and sea, so that the harbor district will be mosquitoless by the time the skippers move into their new home.

Pacific Coast Races

The fastest time ever made by a motorboat under official test in Pacific waters was the outstanding feature of the mile speed trials held Sunday, May 7, by the Los Angeles Athletic Club Motorboat Racing Association. William W. Paden's Hurricane II covered the distance in one minute flat, or at the rate of sixty miles an hour and thus annexed the title of the swiftest craft in Southern California for the year, and won the Los Angeles Athletic Club trophy, a beautiful cup. The trials, an annual event, of which these were the second, were run on the smooth water of Long Beach Channel, Los Angeles harbor, over a straight-away course. This is a free-for-all, but trials for craft of 800 cubic inches or less displacement also were staged.

It was with Wild Bill Cubbon, an expert driver, at the wheel that Hurricane II, her throttle wide open and her power plant roaring like a cyclone, was sent over the finish line in sixty seconds and a new Pacific Coast record established. Her dash was a thriller and was witnessed by one of the largest crowds that ever attended a speedboat contest at the harbor of the western metropolis. Every bark of her powerful engine was distinct at the starting line, and as she came tearing down the narrow channel, her roars gradually increased in volume, the spectators stood on their toes and watched her leaping form in silent wonder. At times her hull seemed actually to clear the water, yet her speed increased. When she dashed across the finish line every man on the official barge and on the scores of boats lining the home stretch instinctively realized that the record had been smashed. Their cheers told the story.

And broken it was—by nine seconds. At the first trials, late in 1920, over the same course, Frank A. Garbutt's Mystery V, a displacement boat, set a record of 1 min. 9 sec. This was a world mark for a displacement craft. Hurricane II is a hydroplane, Hacker designed, driven by a twelve-cylinder motor. She is only 24½ feet long and not expensive as racing boats go. Seventy-two miles per hour is claimed for her unofficially.

Dustin Farnum's Los Angeles II, holder of the Nordlinger trophy and winner of the Fellows Day 66-mile open-sea battle, ran second to the Hurricane and was credited with a speed of 55.90 miles per hour, computed upon her best run—each boat being entitled to three trials, flying start. The sprints made by this larger hydroplane were exceedingly spectacular because of the great clouds of spray thrown up in a double column by her surface propellers. Mr. Farnum himself got the mile out of her in 1:04.4. Two later trials with Harry G. Vorhauer driving failed to equal this mark. While returning to the finish line just after her final mile dash Vorhauer electrified the spectators by skidding Miss Los Angeles around an amazing turn. During this

performance the powerful hydroplane momentarily disappeared from view in a huge burst of spray and gave every appearance of sinking. Even observers on the upper decks of vessels but a hundred yards away feared she was bound for the bottom. She righted herself, however, and continued to the judges' barge, after which she made a long run about the harbor. She did not go under and bob up again like Frank Garbutt's non-sinkable Mystery in the Fellows Day race.

Owing to her remarkable submarine experience on that occasion the Mystery, which had been expected to demonstrate class of an order never before seen, did not participate in these trials. Her two engines, flooded with salt water, had to be torn down and it was found impossible to reinstall them in time, though work was prosecuted day and night. It was a disappointment to the fans as well as to Garbutt. This is not Mystery V, but a new creation—for Garbutt continues to augment his string of speedsters, making each addition superior to all predecessors, and evidently aiming to get at the head of the world procession.

Piloted by Joe Fellows and his young son, Rusty, the Fellows IV, powered with a G. R. Sterling, reeled off her best mile in 1:26.4, a speed of 41.57 miles per hour. Running as smoothly as a watch and never missing a shot, she maintained the Fellows reputation for consistency first, last and always.

There was good action in the 800 cubic inch class—displacement boats. It was a close battle, bordering on the bitter. Harold W. Tuttle's Valve-in-Head I, a spanking new one, defeated the Garbutt Mystery IV, piloted by Frank E. Garbutt, by the narrow margin of 2 sec. The latter boat in turn beat Ralph Hamlin's Joker by nearly 3 sec. It was Hamlin's fondest ambition to put it over the Garbutt entry. They have been rivals in other contests. The Valve-in-Head I turned the mile in 1:46.6, or 33.7 miles per hour, and captured the Howard Automobile Company trophy. R. M. Stagg's Stagg, but a few weeks in the water, negotiated the mile in 2:07.8.

These little boats are powered with Hall-Scott motors, except Mystery IV. With only 288 cubic inches displacement she competed in the 800 class and took second.

Timing was by an electric device, which worked perfectly, and there was not the slightest hitch or inaccuracy. The association insists on rigid conditions, and heats do not go as fast as owners expect, but they have the satisfaction of knowing that all records are accurate and beyond question.

OFFICIAL SCORES OF MILE SPEED TRIALS AT LOS ANGELES—Free-for-All and 800 Cubic Inch Displacement Classes.

Straightaway Course, Flying Start			Average Miles
Boat	Owner	Time	Per Hour
Mystery IV.....	F. E. Garbutt.....	2:01.6	29.60
Mystery IV.....	F. E. Garbutt.....	2:05.8	28.61
Mystery IV.....	F. E. Garbutt.....	1:48.6	33.15
Joker.....	Ralph C. Hamlin.....	1:54.6	31.41
Joker.....	Ralph C. Hamlin.....	1:53.8	31.63
Joker.....	Ralph C. Hamlin.....	1:51.4	32.31
Fellows IV.....	Joe Fellows.....	1:26.6	41.57
Fellows IV.....	Joe Fellows.....	1:30.6	39.73
Fellows IV.....	Joe Fellows.....	1:26.4	41.67
Stagg.....	Raymond Stagg.....	2:07.8	28.17
Valve-in-Head I.....	H. W. Tuttle.....	1:51.4	32.31
Valve-in-Head I.....	H. W. Tuttle.....	1:46.6	33.77
Hurricane II.....	W. W. Paden.....	1:01.4	58.63
Hurricane II.....	W. W. Paden.....	1:00.6	59.40
Hurricane II.....	W. W. Paden.....	1:00.0	60.00
Miss Los Angeles II.....	Dustin Farnum.....	1:04.4	55.90
Miss Los Angeles II.....	Dustin Farnum.....	1:05.6	54.88
Miss Los Angeles II.....	Dustin Farnum.....	1:04.6	55.73

(Signed) E. E. Caister, Scorer.

H. D. Ryus, Starter.
Geo. M. Adair, Chief Timer.
L. A. Henry, Timer.
L. G. Feagans, Timer.
H. F. Weller, Timer.

Storage Facilities at Consolidated

To meet the ever increasing demand for storage space at their yards, the Consolidated Shipbuilding Corporation has leased a strip of land adjoining their properties, on the North, on the Harlem River. For many years prior to the war and the succeeding ones, this Company has been unable to fulfill all the storage requirements of customers owing to the lack of space.

The leasing of more land has practically solved the problem, and will allow this company to accommodate at least one hundred additional yachts and motor boats. Two hauling and launching ways adjoin this new property on the South. A large ways is now being erected on the recently acquired property which will add materially to the rapid handling of boats on this area. The usual watchman service, day and night, will be maintained and extended to cover all boats stored in the new section.

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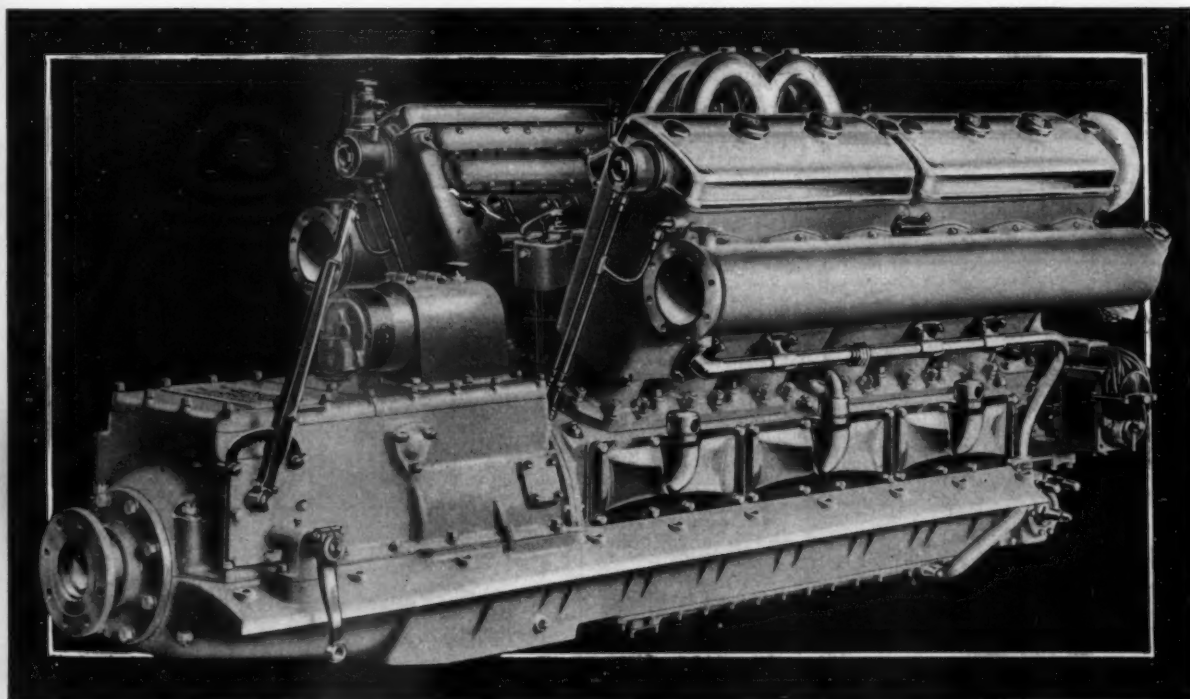
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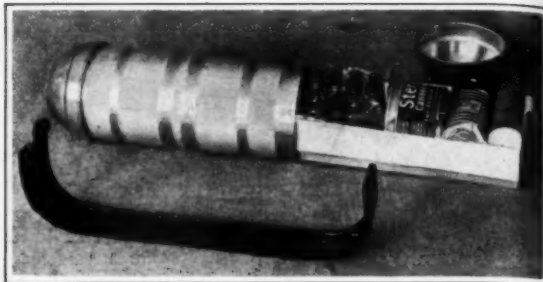
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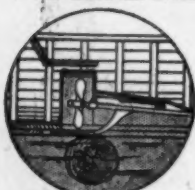
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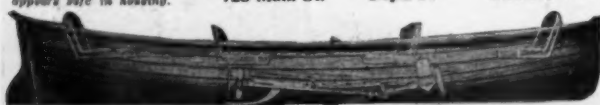


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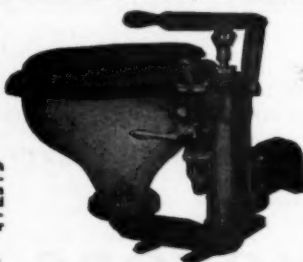
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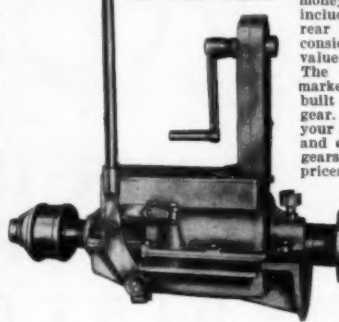
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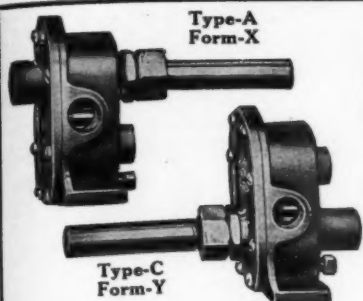
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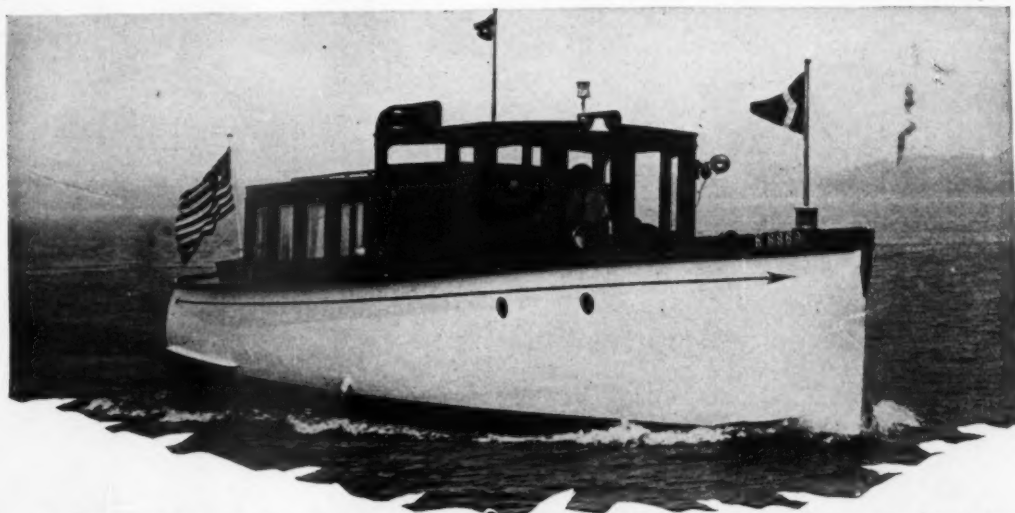
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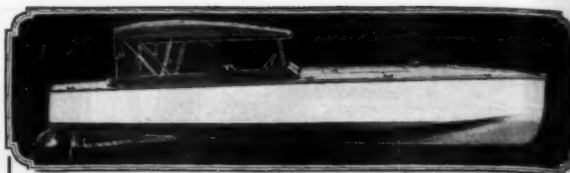
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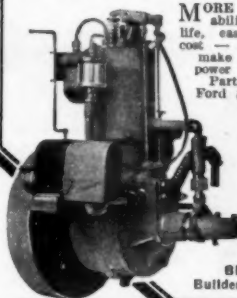
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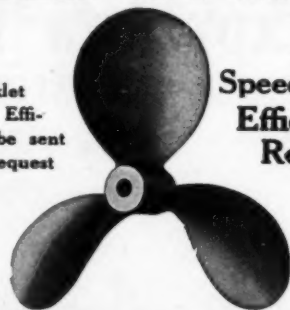
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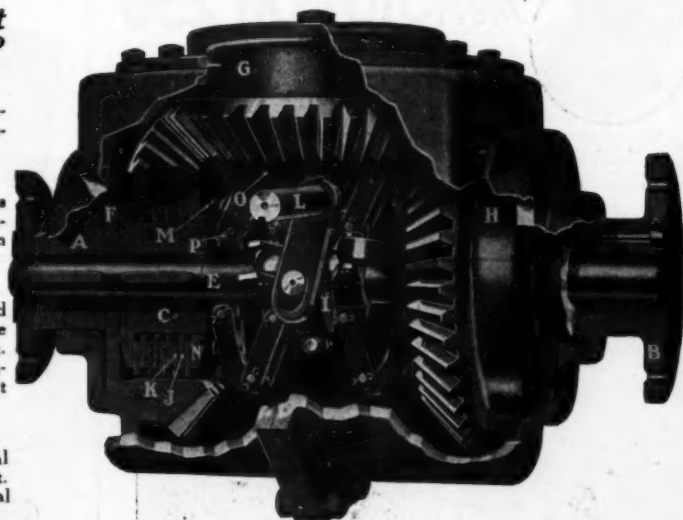
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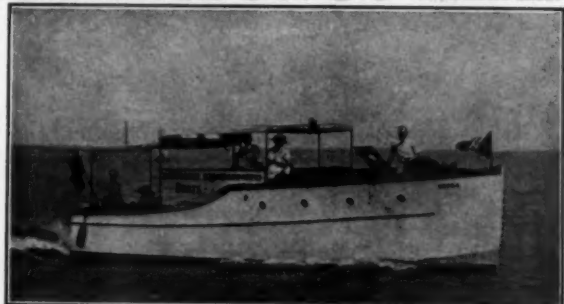
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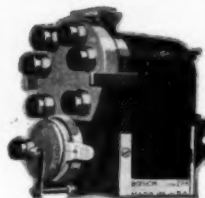
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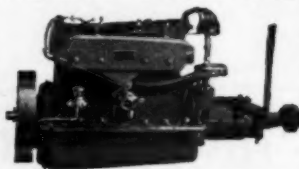
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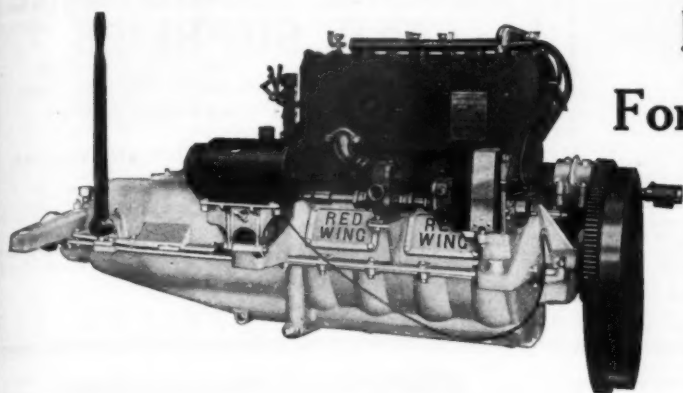
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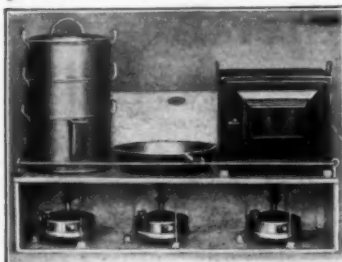
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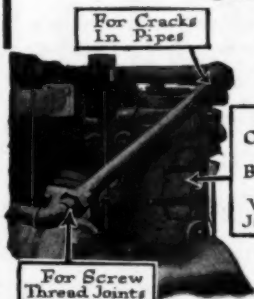
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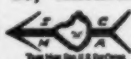
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be if she was

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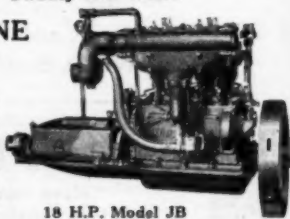
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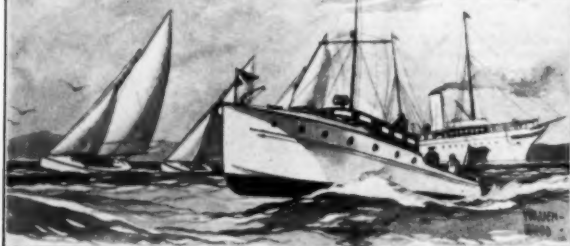
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GILL CROWN SPARK PLUGS



Expressly designed for High Speed, High Compression Engines, for Heavy Duty, for "Oil Pumpers."

THE Gill Crown Plug is made to stand up without trouble in engines that ordinary plugs won't fire. Oily engines, engines that quickly soot their plugs or overheat will run smoothly with the minimum of annoyance when equipped with a set of Gill Crown Plugs.

The "crown" or castellated end of the shell provides eight large openings through which oil and carbon are blown out at each explosion. As a result the porcelain is not only kept cleaner but cooler.

A metal washer of high manganese nickel on the center electrode further protects the porcelain from oil, soot and heat. This washer acts as a secondary spark gap if the original spark gap gets too wide after long service.

Gill Crown Plugs are built to outlast your motor and are guaranteed in material, workmanship and operation. \$1.00 each, any thread.

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Liberal Proposition for Dealers and Agents. Write.

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Correct Papers Submitted in May

The following whose papers were received during May have passed in the Piloting, Seamanship and Small Boat Handling Course:

LESSON No. 3

J. H. Belt, A. F. Keck, Charles Nagel, Mrs. John J. Slater, Meredith Scott, Roy E. Williams, N. F. Woodhull.

LESSON No. 4

V. C. Baird, F. W. Mosteller, A. Scholz, N. F. Woodhull.

LESSON No. 5

Grant W. Booner, Andrew Dunlop, Arthur E. Kumm, A. Scholz, George Webster.

LESSONS NOS. 6 AND 7

Arthur E. Kumm, Frederick Lewis, Donald Spoor, W. Blood-Smyth.

LESSON No. 8

William Harry Palmer, H. Lloyd Williams.

LESSON No. 9

William Harry Palmer, H. Lloyd Williams.

LESSON No. 10

Mrs. W. E. Clarke, William Harry Palmer, George A. Rawson, Barbara F. Smith, H. Lloyd Williams.

LESSON No. 11

Milton C. Bergey, Mrs. W. E. Clarke, J. Dunbaugh, J. W. Lough, William Harry Palmer.

LESSON No. 12

Mrs. W. E. Clarke, J. Dunbaugh, J. W. Lough, Walter Monroe, Donald Spoor.

LESSON No. 13

Nick Antoniou, Harry R. Broll, Michael Cibener, Mrs. W. E. Clarke, J. Dunbaugh, W. J. Gorton, A. E. Jones, F. G. Moe, Fred Scadden.

The following whose papers were submitted during May have passed in the Dead Reckoning Course:

LESSON No. 1

W. A. Cornell, Robert Cunningham, R. Eyalson, Harry Quick, Fred Scadder, Fred'k E. Smith, August G. Weber.

LESSON No. 2

R. Andren, Dr. A. B. Bennett, Elmer L. Belanger, Percy S. Benedict, O. A. Benson, John C. Brodhead, L. G. Barton, Wilson G. Boyden, Ralph Christie, Michael Cibener, L. L. Crothwaite, W. A. Cornell, I. S. Ellsworth, Albert J. Fenton, James V. Lawrence, W. J. Mozart, W. B. Moores, Ian L. McKenzie, L. P. O'Keefe, William H. Palmer, Harry Quick, Edmund Roxby, C. Custer Robinson, Dr. J. F. Schefcik, F. B. Smith, H. R. Stiles, J. K. Sexson, Fred E. Smith, Stanley C. Wilcox, L. E. Wilson, H. T. Zachgo.

Canadian Vickers, Ltd., to Build Sea Sleds

(Continued from page 58)

The next boat of Sea Sled design to create a new era will probably be the immense 57-foot Sea Sled cruiser built this Spring for Henry B. Plant. This is a cruiser with complete cruising accommodations, a large, heavy, seaworthy boat equipped with four 300 H.P. Murray & Tregurtha motors. It is safe to say that very few, if any boats, have ever received as much comment as this new cruiser is receiving.

Besides these boats that have been actually built at the Connecticut works of The Sea Sled Company, there are a great many other prominent Sea Sleds that have been designed by the designing force in this country, and built in other places, notable among them being the Sea Sleds constructed in England by Saunders at Cowes for Claude Grahame-White, the foremost being the 42-foot by 8 foot 9 inch, equipped with two Rolls-Royce engines, the boat being known as Miss England.

Evinrude Again Improved

In line with the Evinrude Motor Company's policy to continually improve their products, an improvement that will be of considerable interest to owners who use their motors on salt water is now announced.

After considerable experimenting, a new improved insulating varnish has been obtained, the use of which makes the Evinrude even more dependable in densely moist, salt water atmospheres.

Although the Evinrude magneto has always enjoyed an excellent reputation, and has proved fully as dependable as ignition outfits on larger motors, that often cost more money than the entire Evinrude, this latest improvement will undoubtedly mean sure ignition always, regardless of weather conditions.

The new insulating varnish is applied on alternate layers of the secondary armature winding. The varnish has a rubber-like base substance which never hardens, and always maintains an elastic body. This gives the wire an opportunity to expand and contract, preventing breakages, and also makes an excellent water-proofing agent.



"Frisbie an' I" and the Harvey - DeVora Trio

have been the best of friends
for eight long years

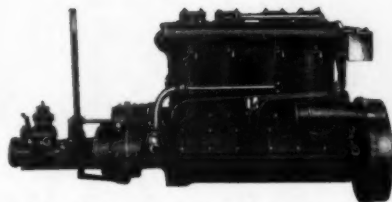
Every summer Bert Harvey and Miss DeVora, who, in private life is Mrs. Harvey, turn to their Frisbie powered cruiser, Milbert, for rest and recreation.

Their "friendly" Frisbie, with its freedom from trouble, makes cruising an unalloyed pleasure. Not once since it was installed in 1914 has it been in need of repairs. Its low consumption of oil and gas sounds almost unbelievable; 5 gallons of lubricating oil for a whole season, 10 to 11 miles on $2\frac{1}{2}$ gallons of gas. And the Milbert is a good sized boat, too—36' x 9' 7" x 3' 6".

If this sort of performance appeals to you, we should be happy to tell you more about the Frisbie line.

The Frisbie Motor Company

7 College St., Middletown, Conn.



13 Models: 1 to 6 Cylinders; 5 to 100 H. P.



Frisbie an' I

When writing to advertisers please mention MoToR Boating, the National Magazine of Motor Boating, 119 West 40th Street, New York



Folds Up and Stands Up The COMMODORE Folding Yacht Chair

A man's size chair, rigid and strong, yet light, elegant and comfortable.

Recommended by the Albany Boat Corporation

This Chair has been for some time standard equipment in our fine boats. We thought so well of it that we purchased the patent and are now making it ourselves.

Open, 25½ inches wide; closed 9 inches wide. Frame, solid mahogany, natural finish, or Rock Elm in Forest Green. Aircraft Truss frame, seat and back yield to position of body. Copper fastenings, rubber leg-tips.

Model B, unvarnished	\$ 4.70
Model B, varnished	5.40
Model A, forest green, varnished	7.00
Model A, mahogany	12.00

Order by wire or letter for prompt shipment.

ALBANY BOAT CORPORATION

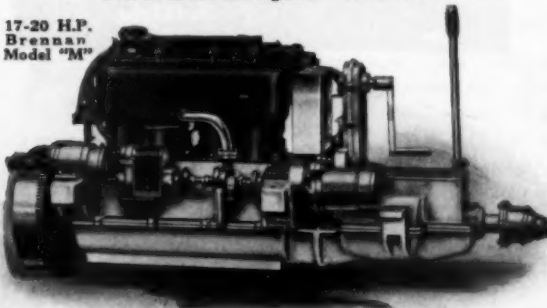
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A New BRENNAN at a New Price

Prices Reduced Again. No Extras

17-20 H.P.
Brennan
Model "M"



Brennan Standard Motors Lead in Marine Value

The Brennan is a complete power plant with two unit electric lighting and starting system, and every other accessory built in. No extras required as our equipment embodies a complete outfit. This applies also to the Brennan Model B medium duty 25-35 H.P., and the Model B high speed type 35-40 H.P.

At our new reduced prices this completely equipped motor, including electric starter, costs you no more than an ordinary motor without equipment.

Write today for catalog and prices.
Order quick if you want early delivery.

BRENNAN MOTOR MFG. CO.

500 East Water St.

Syracuse, N. Y., U. S. A.

Cable Address: "Binot"

Yard & Shop

(Continued from page 57)

Mullins Reduces Prices

Mullins Body Corporation, Boat Department, well known builders of standardized high grade steel and wooden motor boats, row boats, and cedar, canvas-covered canoes, have issued their new 1922 catalog, quoting extremely reasonable prices on all models.

The Mullins line is larger and more complete than ever before, in both V-bottom and semi-round bottom models, 16 to 26-feet in length, prices ranging from \$195.00 to \$3,600.00, speed from 7½-miles to 28 m.p.h.

All of the Mullins steel row boats and cedar, canvas-covered canoes sell for less than \$100.00 and come under the government excise tax exemption, effective January 1, 1922.

Readers of MoToR BoatinG who are desirous of getting a standardized stock boat of latest design and construction, guaranteed to the limit, should write Mullins Body Corporation, Boat Department, Salem, Ohio, at once for their very complete catalog describing launches, rowboats, and canoes, quoting pre-war prices.

Frisbie Motors to Be Used

In the account published in March MoToR BoatinG on the rebuilding of the 24-foot motor sailers which are being rebuilt for W. L. Warner it was mentioned that a two-cycle motor was to be installed. Later information has reached us from the Frisbie Motor Company in which they state that two-cylinder 10 h.p. Frisbie four-cycle motors will be installed in these several boats. The owners of these boats are all members of the Middletown Yacht Club and it is anticipated that the service to be secured from these hulls and engines will be most satisfactory. These little boats are to be altered into auxiliary sloops and a cabin built over the forward portion of the hull. As modified they present a very attractive appearance.

Standard Gear Company Works Overtime

Word has reached us that the volume of business being handled by the Standard Gear Company of Detroit is so great as to require the plant to work nights and Sundays in order to cope with the demand. This business is directly due to the advertisements in recent issues of MoToR BoatinG. Orders are still coming in for the new 1922 model multi-cone clutch in gratifying numbers. A sentence from their letter states "MoToR BoatinG is sure pulling well for us."

Advantages of Marine Glue

In commenting on the ease with which an old boat can be made serviceable again by the use of marine glue a letter to L. W. Ferdinand & Co. of Boston, Mass., by a satisfied user of their products is quoted. "There was a hull here last spring which was considered a total wreck unless it could be rebuilt at a cost that would almost equal a new hull. The owner of this hull desired to have it put in shape again for sentimental reasons but did not like to invest the amount of money required to rebuild it. I proposed to him that it could be fixed at about one quarter the cost of rebuilding by using Jeffery's Block Soft Quality Marine Glue in combination with canvas. During the process of repairing the hull many sarcastic remarks were made. I myself was in doubt whether it would stand up, in fact when I took the job I told the owner I considered it a gamble and would not recommend it. Well, anyhow, I fixed it up and followed the instructions in your booklet and today, after the season's run I am not afraid to guarantee the work for two or more seasons under ordinary usage. All the boat owners here were astonished and would not believe it, had they not seen it with their own eyes.

"F. W. ERBERT, Temiskaming, P. Q."

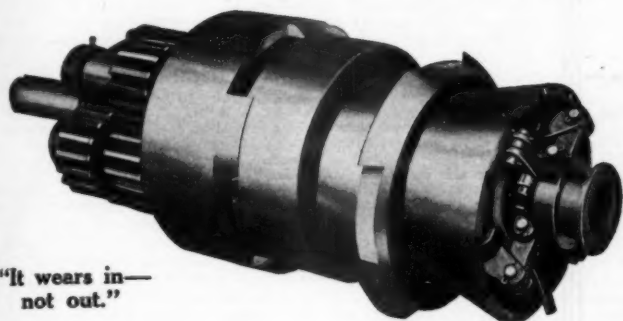
Foamite Firefoam

A British invention designated as firefoam is a substance which has the property of extinguishing oil flames almost immediately. Many of the new Trans-Atlantic liners are being equipped with this method of controlling oil fires and since water has no effect whatever on oil, once alight this material is particularly desirable. In use this foam oozes rapidly from its container and spreads over the burning surface of the oil like a blanket. The air is thus excluded and the fire extinguished. The general introduction of foamite will do much to insure safety at sea.

The Hit of the Year—the 1922

STANDARD

Reverse Gear



"It wears in—
not out."

with the new
**MULTI-CONE
CLUTCH**

The 1922 Standard Reverse Gear with the new Multi-Cone Clutch is keeping our factory busy day and night to meet the demands of boatmen. Old timers know that the satisfaction any gear can give depends on the efficiency of its clutch. And everybody recognizes in the Multi-Cone the most practical design possible for a marine clutch.

This clutch takes hold as gently as a steam engine, and holds on like a bull-dog. It is simple and easy to adjust, powerful, compact and trouble-proof. Disengages freely and won't drag in the neutral position. The longer it is used, the smoother it works.

And add to this a perfect reversing mechanism, running in oil and completely enclosed in a handsome oil-tight case. No wonder the Standard is so popular.

Model "C" Standard Multi-Cone
for

100 H.P. HALL-SCOTT

Entirely Enclosed

\$100 00 COMPLETE

Write to-day for description and prices, giving complete details of your boat and engine so we can recommend the proper size gear for your outfit.

Standard Gear Co.
5928 Commonwealth Ave., Detroit, Mich.



CAILLE
DETROIT



The All-Purpose Rowboat Motor

For nearly ten years people all over the globe have used this motor for fishing, hunting, trapping and pleasure boating. It's the ideal knockabout motor. Strong and sturdy, simple and well made. Easy to operate. Dependable under all conditions. The Caille

NEPTUNE ROWBOAT MOTOR

is made of best materials and most simple design. Develops 2 H. P. Will drive boat 7 to 10 miles an hour or at trolling speed. Has weedless propeller and water-cooled exhaust. Low in price—high in quality. Send for details. Dealers wanted.

THE CAILLE PERFECTION MOTOR CO.
47 Caille Bldg. Detroit, Mich.

BLACK & WHITE

VALVE GRINDING COMPOUND

Don't Waste \$1.00 Worth of Time on 10 Cents Worth of Grinding Compound.

BLACK & WHITE is the fastest cutting compound on the market. Costs no more than others and saves more than its cost because it works so fast.

Polishes as it grinds and will not leave rings or ridges. Coarse, medium and fine grades.

Try Black & White

If your own dealer doesn't sell genuine **BLACK & WHITE**, send us his name with 50 cents for regular 5-oz. double can containing ample supply of coarse and fine grades for grinding 100 valves.

Big seller for dealers. Valuable territory still open. Write.

ABRASIVES SALES CORP.

17 East 49th St., New York, N. Y.

Factory, Mt. Vernon, N. Y.

BLACK & WHITE Valve Grinding Compound is sold by these dealers and many others:

NEW YORK	Long Island Hardware Co., Inc., Long Island City	Connecticut Bearings Company, 294 York Street, New Haven
Bettes & Ebesen, 150 Chambers Street, New York City	Motor Car Supply Co., Inc., 228 W. 56th St., New York City	NEW JERSEY
Argo Packing Company, 22 South Street, New York City	Babcock & Butler, 839 8th Avenue, New York City	John R. Hanby, Hoboken Avenue, Jersey City
Ryan & Hughes, Inc., 1808 Broadway, New York City	S. P. Story Company, 19 Division Street, New Rochelle, N. Y.	Brighton Auto Supply Company, Atlantic Avenue, Atlantic City
W. B. Crane & Company, 1912 Broadway, New York City		MICHIGAN
	CONNECTICUT	T. B. Rayl Co., Detroit
Prugg Bearing Co., 1912 Broadway, New York City	Eugene M. Roberts, Stratford	PENNSYLVANIA
		Wireless Electric Company, Stanwix Street, Pittsburgh

The Inter-Lake Yachting Association

(Continued from page 31)

Plans for this year's regatta includes such events as the annual competitions of the sailors, motor boat experts, swimming and other sports. They give promise of the greatest regatta in history.

Many trophies have been offered for the competition, but one of the handsomest awards is that put up by Commodore Kotcher, for the club of the 27 in the Inter-Lake which can muster the greatest number of sail and motor boats at the regatta. This is a bronze trophy, consisting of a barometer and eight day ship's bell clock, which will be a handsome piece of equipment for the victorious club. Eight classes of sail and 10 of motor boats have been arranged for by the regatta committees. In addition to the regular sailing events, Commodore Kotcher has put up a handsome trophy for the annual ladies' cat boat race, one of the features of regatta week.

Commodore Kotcher is making an effort to obtain the Steamer Arrow for the annual Commodores' reception, that all the yachtsmen and their guests may attend at the same time and combine an informal dance with the reception. The program follows:

I. L. Y. A. PROGRAM

Sunday, July 16

Sunrise Long distance race D. R. Y. A. Bob Lo—Put-in-Bay.
7:00 p. m. Sacred Concert in Town Hall, Put-in-Bay, with Motion Pictures and Radio.

Monday, July 17

a. m. Ball Game for I. L. Y. A. Championship.
7:00 p. m. Yachtsmen's Dinner held at Crescent Hotel. Address by Webster B. Huntington of the Perry Monument Commission on history of the Islands.

Tuesday, July 18

Time	Class
8:30 a. m.	Warning Gun.
8:45 a. m.	Preparatory Gun.
8:55 a. m.	Class R.
9:00 a. m.	Class A.
9:05 a. m.	Class Y.
9:10 a. m.	Class V.
9:15 a. m.	Class J.
9:20 a. m.	Class Star.
9:25 a. m.	Class K.
9:30 a. m.	Class CK.
1:45 p. m.	Open Boats 50 and under.
1:50 p. m.	Open Boats 50 and over.
1:55 p. m.	Monoplanes and displacement racers.
2:10 p. m.	Cruisers 40 and under.
2:20 p. m.	Cruisers 40 to 60 over all.
2:30 p. m.	Cruisers 60 and over.
2:40 p. m.	Express Cruisers.
3:00 p. m.	610 in. restricted class (Hacker-Hall Scott).
3:30 p. m.	625 cu. in. displacement class (National Association Trophy).
4:30 p. m.	Single-engined hydroplanes.
7:00 p. m.	Annual Commodores' Reception.

Wednesday, July 19

Time	Class
8:30 a. m.	Warning Gun.
8:45 a. m.	Preparatory Gun.
8:55 a. m.	Class R.
9:00 a. m.	Class A.
9:05 a. m.	Class Y.
9:10 a. m.	Class V.
9:15 a. m.	Class J.
9:20 a. m.	Class Star.
9:25 a. m.	Class K.
9:30 a. m.	Class CK.
1:45 p. m.	Open Boats 50 and under.
2:00 p. m.	Open Boats 50 and over.
2:15 p. m.	Monoplanes and displacement racers.
2:30 p. m.	Cruisers 40 and under.
2:45 p. m.	Cruisers 40 and over to 60.
3:00 p. m.	Cruisers 60 and over.
3:15 p. m.	Express Cruisers 610 in. restricted class.
3:45 p. m.	625 cu. in. displacement class (2nd heat, Nat. Assoc. Trophy).
4:00 p. m.	Single-engined hydroplanes.
7:00 p. m.	Concert by the Cleveland Y. C. Boys' Band in the park.

Thursday, July 20

Time	Class
9:00 a. m.	Open Boats 50 and under.
9:15 a. m.	Open Boats 50 and over.
9:30 a. m.	Monoplanes and displacement racers.
9:45 a. m.	Cruisers 40 and under.
10:00 a. m.	Cruisers 40 to 60 over all.
10:15 a. m.	Cruisers 60 and over.
10:30 a. m.	Express Cruisers.
10:45 a. m.	610 in. restricted.
11:00 a. m.	625 cu. in. displacement class (3rd heat, Nat. Assoc. Trophy).
11:15 a. m.	Single-engined hydroplanes.
1:30 p. m.	Annual I. L. Y. A. Squadron Sale.
3:00 p. m.	I. L. Y. A. Swimming Championships, under A. A. U. rules.
4:00 p. m.	Ladies' Cat Boat Race for Commodore Chas. W. Kotcher's Trophy.
5:00 p. m.	Rowing Race between Intermediate 8's D. B. C. and Culver Military Academy for the Commodore Kotcher Trophy.
9:00 p. m.	Annual Commodore's Ball at the Colonial Hotel.

Friday, July 21

Time	Class
8:30 a. m.	Warning Gun.
8:45 a. m.	Preparatory Gun.
8:55 a. m.	Class R.
9:00 a. m.	Class A.
9:05 a. m.	Class Y.
9:10 a. m.	Class V.
9:15 a. m.	Class J.
9:20 a. m.	Class Star.
9:25 a. m.	Class K.
9:30 a. m.	Class CK.
7:00 p. m.	Distribution of Regatta Prizes.

Saturday, July 22

10:00 a. m. Squadron Cruise to Port Clinton, O., by invitation of City of Port Clinton and P. C. Yacht Club.

The Snappiest Motor That Ever Pushed a Boat —and by far the easiest to carry



Just drop this marvelous new light weight, twin cylinder Johnson Motor over the end of your boat, and start her spinning. You will find a new thrill in water sports.

This quiet, vibrationless, twin motor completely upsets all previous ideas you may have had of outboard motors. It is so much snappier,

and smoother. So much more quiet and responsive. Open up the spark and throttle control just as you would on your auto and see the shore line slip away. Slow her down for lazy enjoyment of scenery or for trolling so slowly the spoon hook barely twirls. No "pop-pop-pop" of motor explosions, but a low—almost noiseless—purr coming from the same number of power impulses you get from a 4-cylinder car. No batteries to bother with or replace. No mixing valve to nurse. The Johnson has a real built in magneto and a real float feed carburetor. Instant reverse, easy starter, self-tilting, self-righting propeller.

Almost as Easy to Carry as a Pair of Oars

Think of it! Weighs only 35 pounds complete, yet built sturdier, stronger, through better designing and the use of more modern materials. No other motor has case hardened steel crank shaft, propeller shaft and drive shaft. Weight is saved at every turn, but durability and strength and power are at the same time added.

Write for Free Catalog Folder

Tells all about the Johnson Twin—the motor the whole family can enjoy. A 12-year old boy or girl can carry it easily. Takes apart for packing in handy carrying case to go under Pullman seat. For sale nearly everywhere by the better class of dealers.

Johnson Motor Company

860 Sample St.
South Bend
Ind.



"Built on the Banks
of the St. Joe"

Every Johnson outboard motor is guaranteed to operate satisfactorily as claimed and to be free from defects in material and workmanship.

Johnson

for Boats
and
Canoes

DETACHABLE MOTORS

When writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating, 119 West 40th Street, New York

Motor Boatmen's Charts and Log Sheets

Published by MoToR BoatinG
119 West 40th St., New York

Charts printed on heavy cardboard $8\frac{1}{2}" \times 11"$ and punched to fit standard loose leaf folder.

Contain name and location of all principal ports and harbors, distances, compass courses and sailing directions. Invaluable for use on small boats and motor yachts. The set now includes the following charts:

Series A

- No. 1—Western End of Long Island Sound.
- No. 2—Eastern End of Long Island Sound.
- No. 3—Block Island Sound.
- No. 4—New York Harbor.
- No. 5—Boston Harbor.
- No. 6—Buzzards Bay.
- No. 7—Block Island to Vineyard Sound, including Narragansett Bay.
- No. 8—Delaware Bay.
- No. 9—Chesapeake Bay, Part I, Upper Part.
- No. 10—Coast of Maine, Portland to Rockland.
- No. 11—Hudson River, Kingston to Albany.
- No. 12—Chesapeake Bay, Part II, Central Part.

Series B

- No. 13—Lake Erie—Eastern Part.
- No. 14—Lake Erie—Western Part.
- No. 15—Hudson River, New York to Kingston.
- No. 16—Lake Champlain.
- No. 17—Erie Barge Canal.
- No. 18—Massachusetts Coast.
- No. 19—New England—Newburyport to Portland.
- No. 20—Cape Cod Bay.
- No. 21—Maine, Monhegan to Eastport.
- No. 22—Chesapeake Bay, Part III, Lower Part.
- No. 23—Biscayne Bay.
- No. 24—St. Lawrence River and Thousand Islands.

MoToR BoatinG's New Charts—Series C

The third series of MoToR BoatinG's popular charts begins with No. 25, which covers the Delaware River from Trenton to Philadelphia. Others in this series which follow will complete the route to the sea via the Delaware River as well as cover many interesting stretches of cruising waters on the way south and along the coast. It is planned to issue these about as listed below:

- No. 25 Nov., 1921..Delaware River, Trenton to Philadelphia.
- No. 26 Dec., 1921..Delaware River, Philadelphia to Smyrna.
- No. 27 Jan., 1922..New Jersey Coast, Cape May to Little Egg Inlet.
- No. 28 Feb., 1922..New Jersey Coast, Little Egg to Barnegat Inlet.
- No. 29—March, 1922..New Jersey Coast, Barnegat Inlet to Sandy Hook.
- No. 30 April, 1922..Chesapeake Bay, Smith Point to Cape Charles.
- No. 31 May, 1922..Potomac River to Lower Cedar Point.
- No. 32 June, 1922..York and James Rivers.
- No. 33 July, 1922..Delaware Coast, Cape Henlopen to Chincoteague Inlet.
- No. 34 Aug., 1922..Virginia Coast, Chincoteague to Cape Charles.
- No. 35 Sept., 1922..North Carolina Coast, Cape Henry to Beaufort.
- No. 36 Oct., 1922..Carolina Coast, Beaufort to Charleston.

Log Book

MoToR BoatinG has also published a log sheet to fit the standard $8\frac{1}{2}" \times 11"$ loose leaf folder. Each sheet contains spaces for such data as time of passing various aids to navigation, names of aids, magnetic and compass courses, distances, patent log readings, speed of boat, revolutions of motor, wind direction and force, condition of weather and sea, depths of water, fuel, time of high and low water, etc., etc.

Prices

Charts 25 cents each or \$1.50 per set of 12, 36 Charts for \$3.50 (Series C will be sent as published). Log Sheets \$1.00 per set of 50 Sheets.

Loose Leaf Binders (canvas bound) to hold Charts and Log Sheets, \$1.75.

36 Charts, 50 Log Sheets and Loose Leaf Binder to hold Charts and Log Sheets, \$6.00.

MoToR BoatinG

119 West 40th Street,

New York

Among the Islands of the Cheneaux

(Continued from page 19)

denizens of the Snows, with whom the motor boats are almost the only connecting link with the outside world; taking them, when they so wish, to the scattered ports at which the steamship Islander, traversing these secluded seas, will call. It was one of a group of cottages which the Tanner clan had erected here and for which a tenant had somehow been found.

The house was built in cabin shape; it had the usual outfittings of a cabin in the Northern wilds inside. In addition, however, the eye was caught by a lamp, of wrought iron, placed on a shelf protruding far into the room from one side. It marked, again, a cedar chest,—of the local evergreen wood, and with a fireless cooker kept handy inside. In another corner a picturesque Dutch sideboard, with pattern of the Delft blue scattered over it, arrested the notice as quickly. Then, where a splendidly mounted specimen of a local fish hung over a door, a panel, partly drawn, to reveal the man's ice box, excited admiration for the quaintness of its construction as well. There was even a telephone in the cottage,—a home-made affair for connecting with the other cottages. In brief, away up here in the wilds of the Snows one had almost, if not all, of the comforts of home!

Ralph had hurt his hand while preparing the motor boat for the pre-breakfast fishing trip; it pained him now and so our host insisted that it be dressed.

While the one Mr. Tanner attended this, his brother showed us on.

"You must have a peep at Pullet Inn," he suggested.

"You see the motor boats permit our getting eggs and other things when we wish them out of Cedarville, but there is nothing like raising your own supply. So we've put up this hotel"—a dainty little structure, with actual lace curtains at the windows—"for Madam Hen and her brood.

"Ring the bell, please," and, as we did so, the flock of chickens in the woods near came running, as at some human call.

"Simpler, less noisy, just as easy to instill into the hen's heads as calling 'Chick! Chick!' in the old-fashioned way. You will find the chickens inside to greet the caller, and trusting that we may have brought some goodies along. Mark the knocker to the door as you enter."

This last was in the form of a huge cockerel's head.

Inside the hen-house the chickens had gathered as our host had promised. He scattered some corn; then led us out, through another door, to a poultry run among the juniper scrub and arbor vitae at the rear. In the far corner of this yard was what he called The Hospital; it looked most like some wee dog-house, but with windows, and these lace-curtained, at its sides. Within hens that were kept apart from their fellows for observation or for treatment were confined on grassy beds.

Emerging from the poultry run, sweet bell music greeted.

"Just a little whim of Brother's!" and our host led down-trail near the lake. A wire had been stretched from tree to tree here; upon this innumerable brass bells hung. The breeze rang these as it played among the nearby boughs; the roar of the surf upon the beach gave softness and undertone to their chime.

A stone's throw from the bells another Tanner had his home and we must visit him as well. This man, like his kinsmen, is a whittler, a tinker, so he whittles and he tinkers, for he has little else to do when here. In his cottage there was a medicine chest hung against one wall; there was a frame, filled with pictures he had taken round about here, against a door; there were letter-files stretching across the wall upon a third side—all of which bespoke the nature of his skill. Even the big dining table, the ornaments about the hearth, had been made of native material by him in idle hours. This cottage, too, had its motor boathouse nearby; there, again, there were other products of this wood-crafter's skill.

Meanwhile, Ralph's hand had been undergoing treatment, then bandaging by Tanner, Sr., the expert in things of that sort for the place.

By and by he called from the motor boat; a moment more for farewells, and again we were off!

"We are heading toward the open lake now," our skipper called, jubilant and yet a trifle dubious. "I hope you don't mind a few real big swells!"

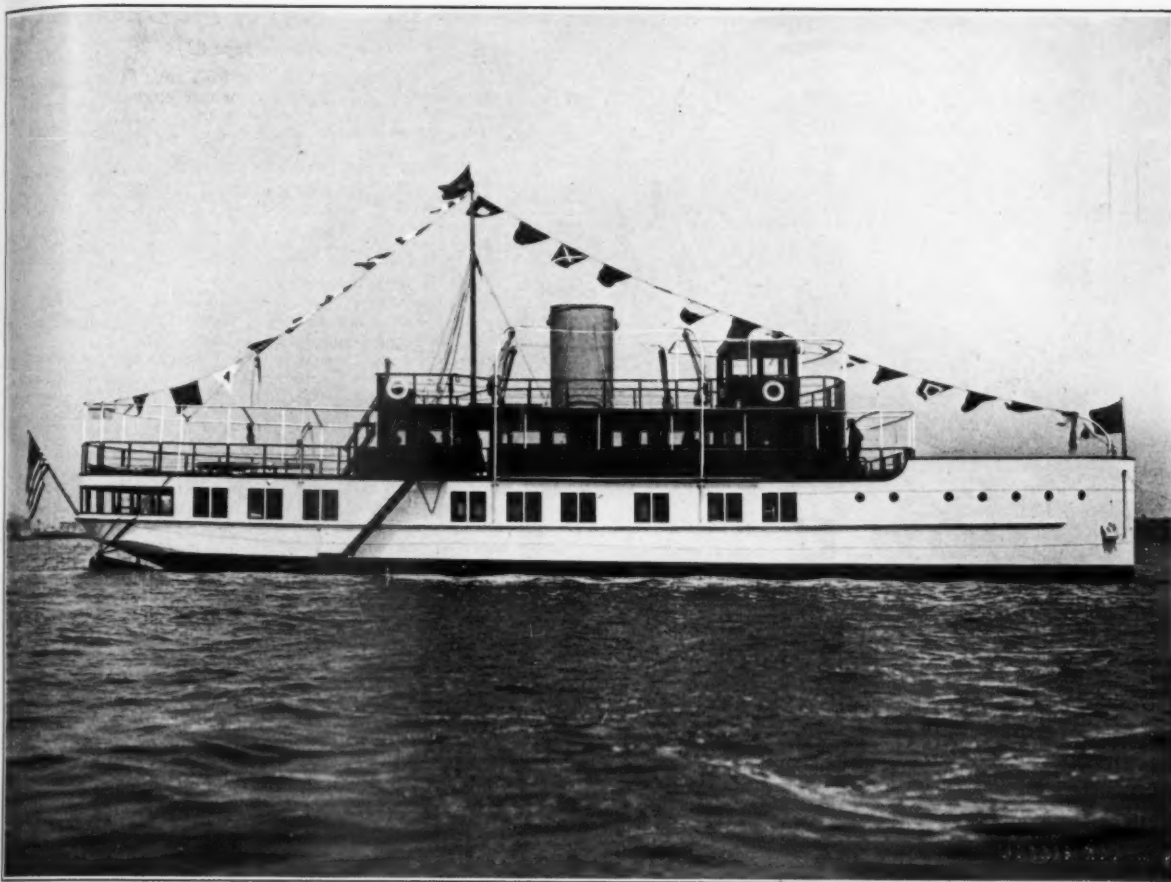
He handed us a field-glass and pointed to a speck out on the horizon, where Lake Huron seemed to melt into the sky.

"That's some freighter!" he suggested. "We'll see more and more of them as we go on, but always at a distance, for they avoid the islands."

We steered straight ahead for the main lake. The sun shone down, gloriously warm; Ralph told us of the Tanners. They had made millions in real estate in the Golden West, but the North and the wild called loud and so they had obeyed. They came here every year.

By and by we swerved shoreward. A bit of a dock ran into the lake from the very wilderness; a motor boat rode at anchor there, this with the top to what had once been a buggy mounted at one end. Through the trees we could make out a bit of a wilderness home.

(Continued on page 84)



HOUSEBOAT "MIRAMAR"

LOUIS H. EISENLOHR, Owner

Designed by

HENRY J. GIELOW, Inc.

25 West 43rd Street

New York City

Powered by two 120 B. H. P.

NELSECO

MARINE DIESEL ENGINES

THE NEW LONDON SHIP AND ENGINE COMPANY

GROTON, CONN., U. S. A.



Let the
**BOYCE
MOTO METER**

watch your hidden motor

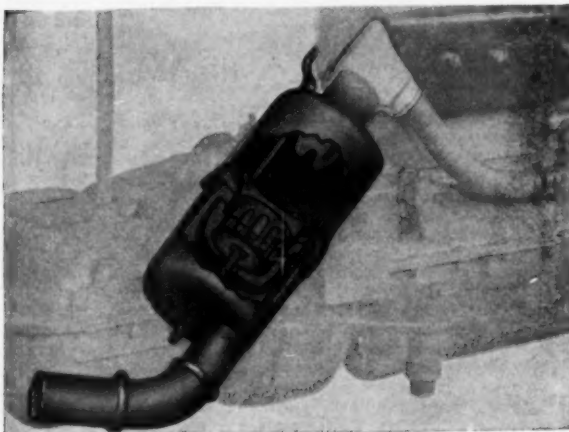
It reveals instantly weeds in the water-inlet, a clogged pump and other causes of overheating damage.

It enables you to regulate your motor temperature to secure maximum gasoline mileage.

Price
\$18.00

Write for Booklet

THE MOTO-METER CO., INC.
LONG ISLAND CITY NEW YORK



SILENCE your MOTOR EXHAUST

without loss of power from
BACK PRESSURE

The Tvedt Adjustable Marine Muffler will do this.

Adjusted with the motor in actual operation.

Motor Tests have conclusively shown absolutely no loss of power or speed when using this muffler.

Write for Descriptive Catalog and help to eliminate in your harbor the nuisance of motor exhausts.

Built in sizes for 1½ to 5" exhaust connections.

TVEDT-SMITH CO.
New York Office.

Worcester, Mass.
103 Franklin St.

Among the Islands of the Cheneaux

(Continued on page 82)

Ralph halloed, a deep rich bass; the hills gave back an echo or two, then a woman's voice from somewhere answered.

"Come on!" the man called; even as the red man might have summoned his mate from flensing the deer for his dinner, from these very waters not two decades since.

"All right!" she replied, as a wilderness sweetheart would, and in a moment the girl appeared from the thicket.

She was tall, full of face, brown of hair, brown of eyes, decidedly pretty.

Ralph introduced us; there was no need of his adding that she was his fiancée. Her name was Polly; her people had come to the islands from Pittsburg.

He bade her make ready for a long motor-boat expedition—she was back, with a sun-bonnet, a wrap, a box of home-made candy and an umbrella, in almost a trice.

Meanwhile Ralph told us of another feature of motorboating in the islands. Just this week he had gone to Cedarville, after supplies. Meeting some friends he had lingered, delaying departure until evening. He had expected a starry, moonlight night. Instead, when too far on his way to retreat, a squall had come up; then a heavy fog settled. Prudence was better than valor, experience had taught him, so he made for an island we could just make out to windward; tied the boat to some trees; and slept,—the sleep of the just,—on the soft moss at the forest's edge. He told it simply to have something to say here; it was nothing unusual at all.

Polly aboard to make things still more lively, conversationally—the girl was born to tease and a cut up, as they say in the North—we headed next for Boot Island.

You won't find the place on your map; it's too small; but Ralph must have the stranger meet some of the residents of the line of picturesquely primitive homes in the woods just back of a gravel strewn beach. Chatting with these hospitable folk, as they poured from their homes to greet us, we almost envied them their dwellings, at least in the summer time. From their porches, from their windows, we could look out on the open Lake here—Huron stretching off, an island ocean, far as the eye could see. From the one direction a freighter plowed its way, a tow behind it; down Lake, from another point of the compass, a huge passenger steamer came. Over in the other quarters—and folk do need the compass to navigate the channels between the isles—little islands beckoned; owned by homesteaders these, almost all.

Just as we proceeded to leave our new-made acquaintances, boarding the motor-boat to continue the trip, an interruption came from the near distance. One of the grocery motor-boats making this island, was heading for port. Of course we must wait and see just what it was bringing this trip; Polly would never be satisfied otherwise.

The lure of the open, the water, the skies, was upon us; we were content to ride at anchor and loaf, as we were content to ride full speed if Ralph would, all day. So we lolled ourselves back among the cushions and watched while the grocer's boy, in his bathing-suit, brought great baskets of all manner of things eatable—ordered by these residents some time previous—ashore; then skipped merrily back, across the gang-plank, for more and ever more. Each of these motor-boat groceries makes ten to fifteen stops on its journey; delivering orders, never leaving a point, however, without as many more. Little wonder that the supply-houses at Cedarville, who despatch these vessels, flourish, even though, come down to visit them, you find each hardly more pretentious than the average country cross-road store!

Nor is all the business done by these floating groceries at the listed stops on their itineraries, nor is the business done in food-stuffs, grocer's other wares alone. Where they go, when they go, motor-boats, skiffs, come out from secluded channels to meet them; or folk on protruding capes hail them to come within swimming distance of these, when they toss other orders—usually on notes put inside old discarded boxes or other things that may readily be tossed aboard a motor vessel—to attendants in the stern or bow. These orders, as suggested, may call not for grocer's wares only, but for other things the islanders have run short of and simply cannot send their own boats after at the moment; sometimes an order will even be for so-and-so many sacks of coal!

Luckily there was candy on sale that day on that floating grocery. It is terribly tantalizing to be seated just beside a box of home-made candy and to know that every time you take a bite you are helping yourself to a pretty young woman's supply! The candy they sold was hardly Fifth avenue confectionery, but it was the best to be had; so it had to do!

Candy aboard and motor-grocery gone, we set off once more. Following the shore-line of Boot Island, for we would return to it in due course, we struck off on a tangent from the open Lake. Island upon Island—large islands, small islands; forest-grown, possibly actually untrodden islands—succeeded; one upon

(Continued on page 88)

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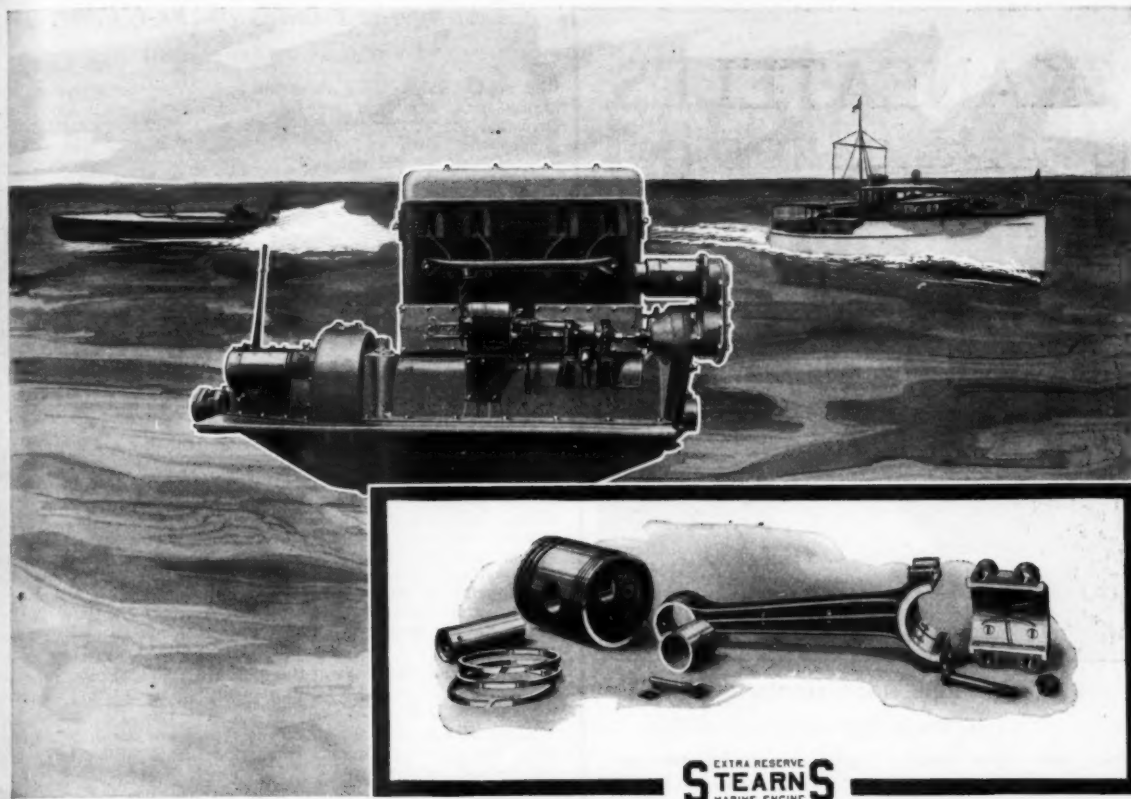
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Among the Islands of the Cheneaux

(Continued from page 84)

the next. Ralph knew them all and named them for us; but Polly sang, My Genevieve and Long, Long Trail, and Ralph whistled the accompaniments; and the motor chugged and the sun shone down and really—now what matter names? We confess that we did not care!

At two separate times we passed some skiffs with fishermen aboard. Once a heron flew over our heads; once we caught sight of an eagle, sentinel to the woods, on a tree-top.

Then we headed toward Boot Island once more; an old, deserted dwelling, which Ralph's mother owned, his beacon to the port.

Landing, he led the way to the house. Its white frame walls, with a porch built about, seemed most inviting, as they stood forth among the trees. The house was crowned with a tall belvedere, commanding a view of all the outermost archipelago. Ralph would have it that the three of us climb the stairs to this, that he might indicate our further course and that we might enjoy the superb view.

Away down in his heart, it took no Solomon to know, Ralph wanted the stranger to see the ancestral home of his clan; he wanted him to see the site of the playhouse where his mother, before him, had played, he wanted the newcomer's eyes to follow the slants of the old shingle roof to where these actually entered the tree-tops, and then sweep the boundless acres of spruces and balsams, of cedars and other Michigan evergreens, all laden with cones now, as these led on and on and on. No, that boundless forest was not all one island, he explained; straits serpentine in a dozen places to part the land but because of the height of the trees, one could not see these from here!

Our host led the way up the loosened stairs; Polly, no doubt to the manner born, as a result of many previous trips, followed; we brought up the rear.

Ralph found seats for all on the railings to the elevated lookout. He gave us time to catch our breath; then he pointed out notable landmarks.

Away off in the distance was the island to which Indians came seeking furs in winter. Nearer by, that speck of green was notable for its huckleberries. Yonder island, closer still, had suffered disastrous forest-fires, as a result of careless campers. Here, squarely before us, on Boot Island itself, but not to be reached so lightly, because of swamps and morasses between, was the heronry.

A monster heron wheeled across the sky; long thin neck craned to throw the head far forward, like some serpent's head instead; wings extended, flapping languidly as the heron rose in the air, then fell. From the forest depths there came the plaintive cry of what the natives call the midday bird, because it bleats so just at noon.

Noon, Ralph suggested, suddenly, was the best time of all to see the heronry. The birds do not like the warm mid-day sun; they seek the shelter of the tree-tops at that time, and, when the nests have young, what more natural for the birds than to retreat to the heronry. We had best be going.

We slipped down the stairs and to the beach. Ralph made the tether of the boat tighter still; to make assurance doubly sure. It would be hours before we returned to it.

Safe, from thieves, from passers by in putputs which might, by some rare chance, come to these waterways? Ralph looked at us askance. Of course that boat was safe. There were no thieves, no vandals here; he'd as soon leave his watch on the rocks overnight as he would on his bureau at home.

Ralph, courteous always, did not venture a word—a sign—to indicate the affront which he felt. Later, however, we learned all about this; how hurt he had felt, until he understood that we could not know. At the time it seemed to him incredible that we should presume an Islander tampering with someone else's motor-boat; let alone presuming to steal it.

He was silent a long moment, while he gathered together the candy, the field-glass, the kodaks and the films. Then, remembering that he was host—that to forgive was the code of the gentleman—his usual good humor returned.

He took Polly's elbow with one hand, the better to guide her over fallen logs, about stumps; he took such of our joint possessions as he refused to permit my carrying, in order that I might jot my notes on the way, in the other hand and beneath his arm. Then, striking up the merry notes of the latest bit of rag-time to reach the islands, Ralph proceeded to lead the way to what he rather felt to be the actual showplace of the archipelago, America's last and almost unvisited large, undisturbed heronry.



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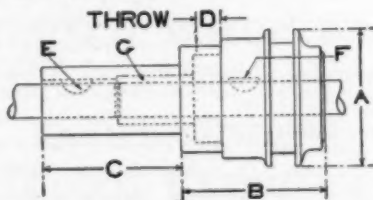
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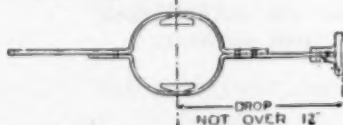
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Measuring and Rating

(Continued from page 10)

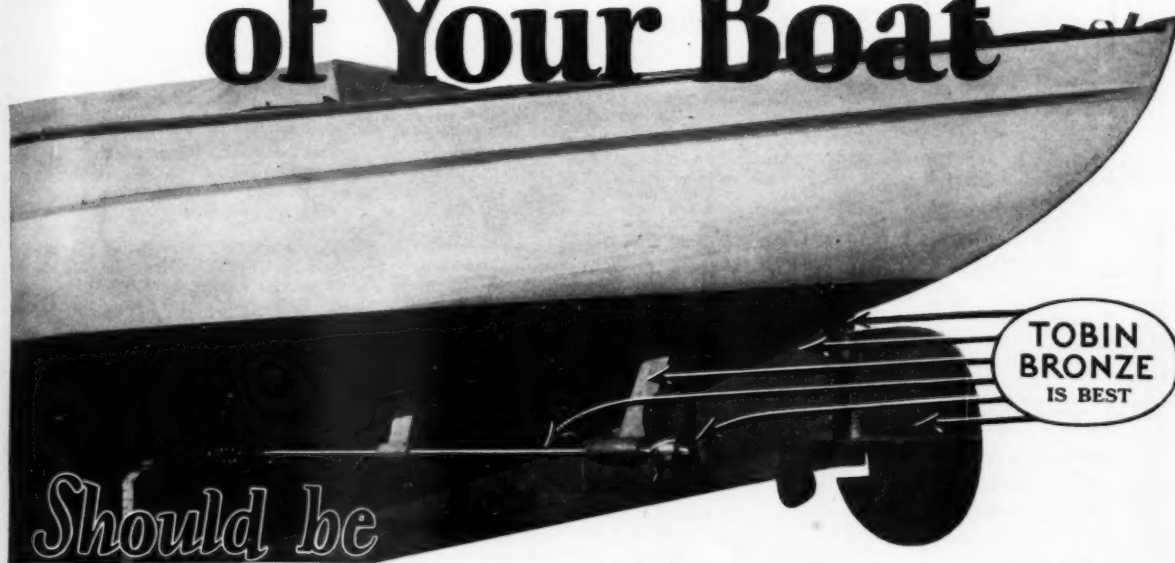
actual boat itself. It will be necessary to measure many dimensions in order to obtain those which are desired. Naturally a dimension such as the waterline length cannot be determined in one operation, and it is necessary to arrive at this figure by measuring the overall length of the boat and then deducting the overhang of both the bow and stern. The remainder is the waterline length, which is the quantity used in the formula. A plumb line is an essential to this operation and is used to secure a vertical base line from which to begin operations. As shown in the illustration, the plumb line is permitted to hang from the stem and stern and the distance between the stem at the waterline and the plumb line is noted down. The formula calls for the load waterline, and since the sixth root of this factor is used, it is not essential that fractions of an inch be considered. The nearest inch will be amply sufficient for this purpose. It is defined to be the distance in a straight line between the points farthest forward and farthest aft where the hull, exclusive of the rudder stock, is intersected by the surface of the water when the boat is afloat in racing trim in smooth water with the crew on board.

The midship section which is used in the divisor of the formula is a very important quantity. The greater this quantity the less will be the resulting rating. All boats which have a small midship section will rate high and should go fast, while those with a large section will rate low and naturally be slower. It will be noted from the little diagram that the midship section is assumed to be the cross sectioned rectangle, the area of which is considered equivalent to the actual cross sectional area of the curved portion of the hull. Naturally it is a physical impossibility to measure the actual area of this position of the hull after the boat is afloat. The substitution of the rectangle overcomes this handicap and permits of a result to be obtained, and by actual trial on the drawing board it will be found that the variation in the figures for the curves or rectangle will be very small. Since the error introduced by this assumption is relatively insignificant, and will apply in the same measure to all boats to which the rule is put, it will cause no unfairness. The point at which the midship section is taken is 55 per cent of the waterline length from the forward end. Should it be known that the section of the hull is greater at some other point, the owner has the privilege of designating where the section shall be measured. In the absence of this information it will be found that the 55 per cent point will yield a uniformly larger midship section than any other point on the hull.

When the point where the section is to be taken has been determined the plumb line is again called into play. After the boat has been trimmed so that she sets on an even keel, the overall beam at the designated point is determined by measuring the distance between plumb lines on both sides of the hull which are permitted to just touch the rubbing strake. With the hull remaining in this trim the distance from the plumb line to the skin of the ship is measured and the deduction of twice this amount from the overall beam will yield the waterline beam. The next consideration is the other dimension to be used in the rectangle of the midship section. This is taken arbitrarily at a point one-fifth of the waterline beam inboard. At this point a vertical dimension is necessary which represents the distance C in the diagram, and it must be obtained in such a way as the construction of the boat will permit. By the aid of straight edges and a square a combination is arrived at, whereby the dimension C can be directly determined. By going through the actual figures used in the computations for the boat which will follow this will be made clear. The overall beam was found to be 8 feet 11 inches. The overhang was found to be 4 1/4 inches. Twice this dimension deducted from the overall beam leaves a remainder of 8 feet 2 1/2 inches as the waterline beam. One-fifth of this in decimals is 1.64 feet. To this must be added the overhang, 0.35 feet, total of 1.99 feet. The straight edges, which are graduated in inches, are so clamped together that one free end will project 1.99 feet beyond the other. This one, which must be at right angles to the first, is so arranged that the ten-inch division comes exactly on a line with the upper edge of the other rule. By the aid of the plumb line the long edge is immersed under the hull so that the vertical edge of the other rule can be placed on the line indicated by the plumb line. Of course, before this is done the rules must be rigidly clamped and the angle tried by means of a square to be certain that it is a true 90 degree angle. The distance from the point where the horizontal rule touches the hull to the surface of the water can then be read directly from it, remembering that if it indicates 23 1/2 inches, for example, there must be deducted the 10 inches of the ruler which are below the horizontal straight edge and do not count. The product of the dimensions obtained, that is, 8 feet 2 1/2 inches multiplied by 1 foot 1 1/2 inches, will give the quantity called the midship section, which, in this particular instance, is 9.234 square feet. The determination of these dimensions completes the actual work required of taking dimensions from the hull. There remains only one other quantity to be

(Continued on page 92)

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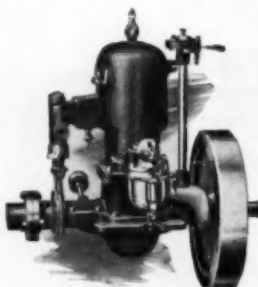
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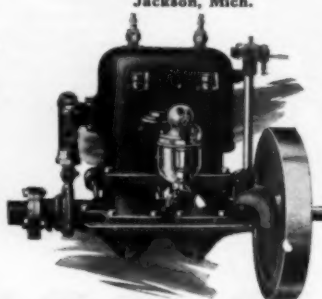
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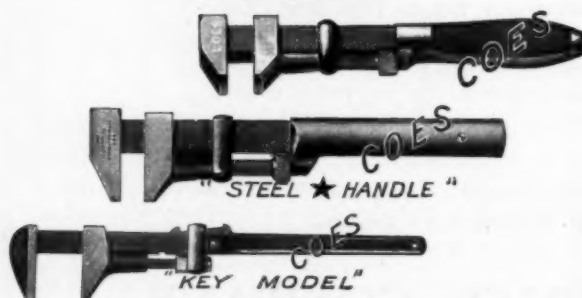
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(Continued from page 90)

determined before we can work our problem, and this is the horsepower of the motor.

To determine the horsepower of the motor used in any cruising boat under the rules of the American Power-Boat Association it is necessary to know the bore, stroke, number of cylinders, and the exact rate of revolution. These quantities are combined in a formula in the following way:

$$HP = \frac{A \times N \times S \times R}{C}$$

In this A refers to the area of one piston in square inches, N the number of working cylinders, S the length of the stroke in inches, and R the maximum rate of revolution obtainable from the motor under racing conditions. The denominator C is a constant which varies for engines of different types. In the case of four-cycle gasoline engines it is 12,000. For two-cycle gasoline engines it is 9,000. For four-cycle Diesel engines it is also 9,000, while for two-cycle Diesel engines it is only 6,000.

The engine in That's Me being a four-cylinder, four-cycle gasoline machine of 5¼-inch bore and 7-inch stroke, will be figured as follows, the revolution rate having been determined to be 455 by several trials. Substituting the figures in the formula, we will get as our result the following:

$$\frac{21.65 \times 4 \times 7 \times 455}{12000} = 22.99 \text{ horsepower}$$

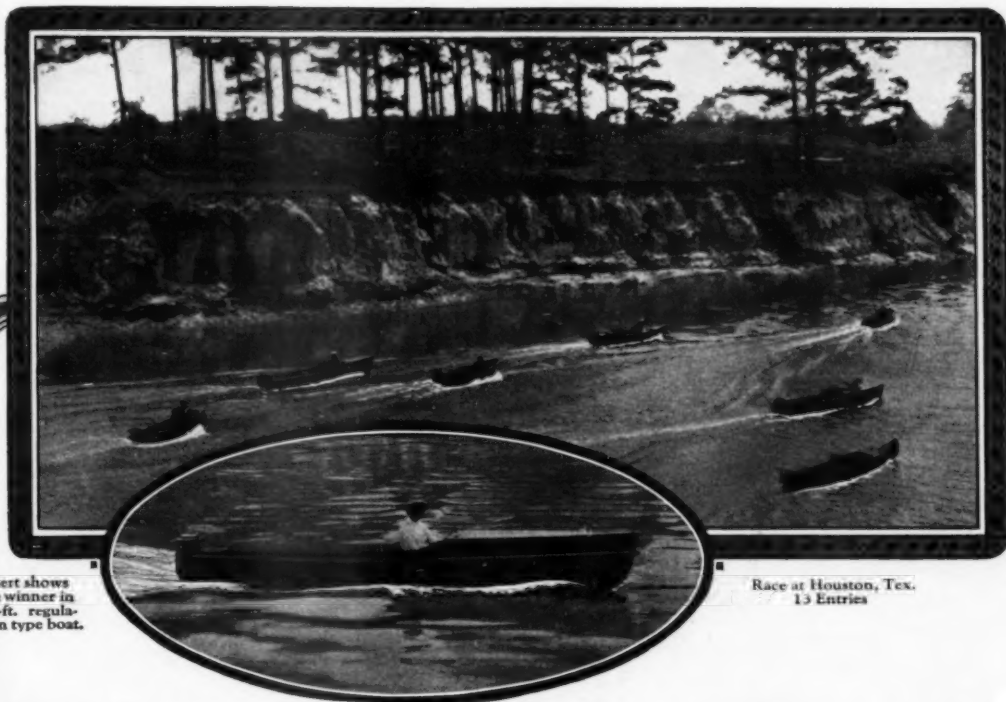
We have now determined all the individual quantities which enter into the rating formula previously referred to. We have the waterline length, 36.88, the horsepower, 22.99 and the midship section, 9.23. It remains only for us to solve the formula involving these to obtain our rating. There are several ways in which this formula may be solved. Perhaps the quickest is by the use of the slide rule, but since this requires considerable dexterity on the part of the operator, it is not customarily used. The next method is the ordinary arithmetical one, where the square roots and cube roots of the quantity involved must be laboriously extracted. It is true that the year book of the American Power-Boat Association tabulates the square and cube roots of the even numbers from 1 to 400, but since the quantities to be used are seldom in even figures, the tables are of little practical use. The favorite method with most people is that of using logarithms. Those who have followed the article on logarithms as an aid to navigation in the series by Dean Potter are familiar with their use. For those who neglected this it will be sufficient to say that quantities can be multiplied and divided by the mere addition or subtraction of their logarithms. There are complete tables of logarithms published in which it is a simple matter to look up the logarithm of any desired number. Square roots and cube roots are obtained by the simple operation of dividing the logarithm by 2 or 3, as the case may be. The computation for the cruiser That's Me used as an illustration is very simple, as can be observed:

log L. W. L. 36.88	=	2/1.566732
log square root	=	.783366
log H. P. 22.99	=	1.361482
log sum	=	2.144848
log M. S. S. 9.23	=	.965390
log diff.	=	3/1.179458
log cube root	=	.393153
log 11	=	1.041393
log sum	=	1.434546
number	=	27.20
add 11	=	11
Rating	=	38.20

The possibility of error is reduced by this method of working the formula to the smallest amount. It involves merely addition and subtraction and the chances of error in these operations is small and the accuracy of the result is superior to the other methods.

The measurer should at the time of measuring the boat mark the forward and after ends of the waterline as well as the waterline on the side of the boat at the point where the midship section is taken. It is also necessary that all marks from a previous measurement be removed so that at no time will there be more than one set of marks on a hull. Measurement certificates are made out according to the data obtained and these are then used to determine the handicap time for the boat in any race under the rules of the association.

(Continued on page 96)



Insert shows
the winner in
18-ft. regula-
tion type boat.

Race at Houston, Tex.
13 Entries

Elto Sets New Speed Record!

At Houston, May 7, the Elto Light Twin demonstrated its remarkable speed by winning the 14-mile outboard motor race although handicapped 3 minutes. The time was 1 hour and 34 minutes against a heavy wind and tide—the fastest speed ever made over the course by an outboard motor.

Elto not only won the race but captured the first three places in a field of 13 entrants. The competing motors included the best-known makes—heavy and light, single and twin cylinder. This was the second race of a series now running at Houston. Both races were complete Elto victories.

Elto is the speediest outboard motor. *Consistently* speedy! It has earned that distinction through performance. If you demand power and speed, choose the Elto Light Twin.

Although Elto is the *fastest* outboard motor, it can be throttled down to perfect trolling speed. It maintains the *slowest* possible trolling speed for hours without a miss or sputter of the motor. Its weedless construction also delights the fisherman. Plows through thickest weeds, comes out clean.

The Elto is a "twin" and develops full 3 H. P., yet it weighs but 48 pounds. Has improved ignition—instant, easy starting. Runs quietly and smoothly. Tilts automatically. Steers comfortably from any part of boat. Underwater exhaust. Oil-tight gear housing. A mechanical masterpiece. A beautiful motor.

Write to Ole Evinrude's new organization for the
Elto catalog and name of the Elto dealer nearest you.

ELTO OUTBOARD MOTOR COMPANY

OLE EVINRUDE, Pres.

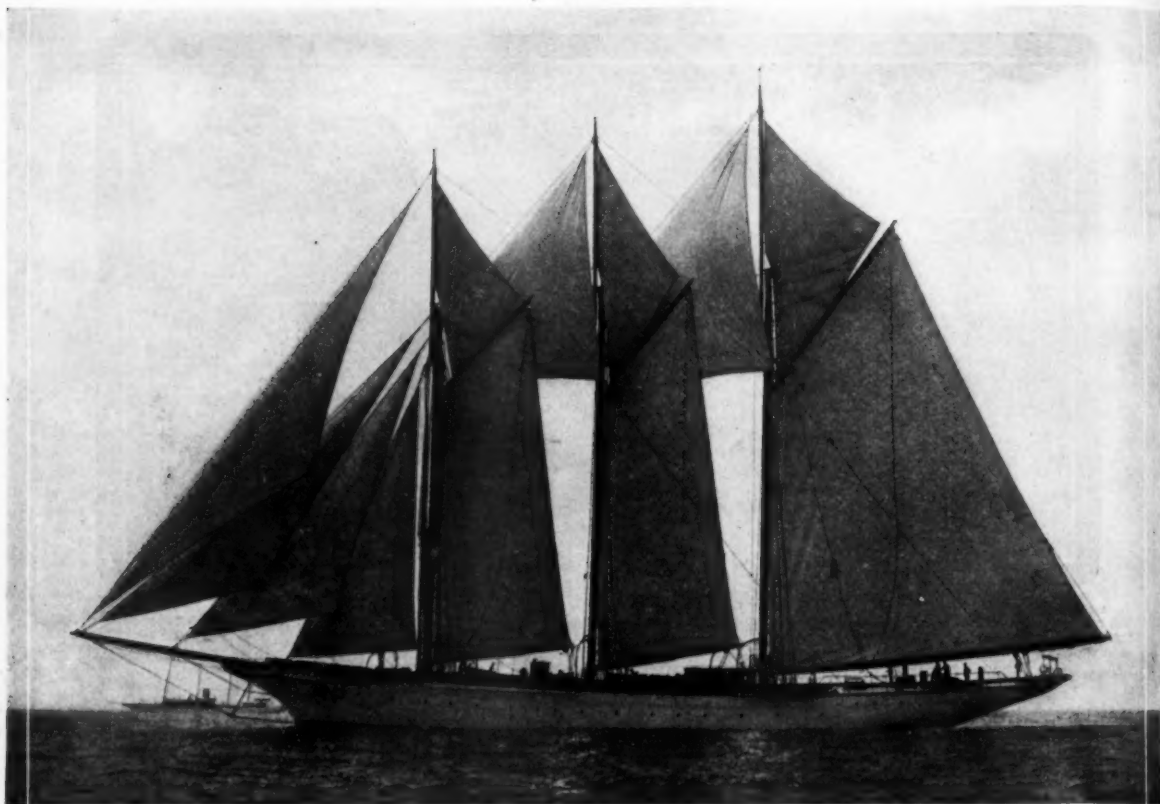
Dept. F Mfrs. Home Bldg., Milwaukee, Wis.

for real speed—

Elto

Light Twin Outboard Motor





"Alcyone"—A Diesel-Electric Yacht

"Alcyone" built in 1908 by Geo. Lawley & Son Corp. from designs by Tams & King and owned by Mr. H. W. Putnam, has recently been converted from a Steam Yacht to a Diesel-Electric Yacht at the yards of the Tebo Yacht Basin.

The new power plant consists of two Winton Diesel Oil Engines, 6 cylinder 11" x 14" developing 225 H.P. at 260 R.P.M., each engine direct connected to a 140-K.W. Westinghouse Generator and a 12-K.W. Exciter, which in turn supply power to a 350-H.P. Westinghouse Driving Motor operating at 175 R.P.M. Two auxiliary Winton Generating Sets are operated by six-cylinder 3" x 4" Winton kerosene motors. Speed with steam plant—10 knots. Speed with Diesel-Electric Drive—11 knots.

Another striking example of the general trend towards Diesel-Electric Drive. Here is a 600-ton yacht in which the speed has been increased, cruising capacity tremendously added to, power plant space reduced, operating expenses minimized and vibration eliminated.

Winton Engine Works Cleveland, Ohio, U.S.A.

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San Francisco:—F. G. Bryant, 593 Market St. Washington:—R. L. Fryer, 817 Albee Bldg.
Seattle:—H. W. Starrett, Sunset Engine Company.



Advertising Index will be found on page 118

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Double Dredging Capacity

Watch an electric dredge work and you will find that it will load a barge or bunker in half the time taken by a steam dredge.

On board an electric dredge you will be agreeably surprised by the convenient arrangement of machinery and the free space available.

A Diesel engine driven generator supplies the current to the motors which, individually, drive all machinery, including the propeller.

Motor drive allows the barge machinery to be placed just as desired for the best operation.

The control can be located at any desirable point.

No boilers—no coal bunkers—no heavy reciprocating engines.

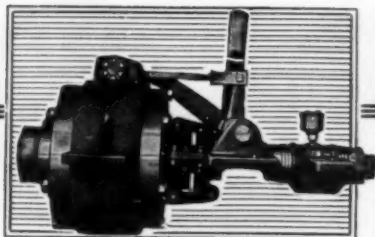
The fuel consumption is reduced one-half or more. The capacity is practically doubled.

Westinghouse Electric & Manufacturing Company
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Westinghouse

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170-lb Gear Handles 450 H. P.

A Joes Duplex Drive Gear Weighing only 170 lbs. can transmit the power of a motor rated 450 H.P. at 1800 R.P.M. without danger of falling down at a critical moment, because the forward drive is transmitted through multiple disc clutches instead of through locked gear teeth.

Joes Duplex Drive has never yet lost a race; and it has helped win more big races than all the other reverse gears on the market put together.

JOES FAMOUS REVERSE GEARS

80% - 88% REVERSE SPEED RATIO

Powerful Backup Insures Perfect Control

In work or commercial boat service, the high reverse ratio of Joes Famous Reverse Gears affords a quick, powerful back-up that insures perfect control of the boat under all conditions.

Joes Duplex Drive Gear, with its 88% Reverse Speed Ratio, is made in sizes suitable for all medium and heavy duty work, as well as for racing.

Joes Husky Gear meets the need for a bigger, heavier gear for extra heavy duty motors and big oil-burning engines.

Joes Hipower Gear is perfectly adapted for all sorts of general work where a light, high speed motor is used. Also used in large numbers by motor manufacturers for unit installation.

Joes New Enclosed Gear has won instant favor, and is particularly well adapted for pleasure and passenger boats.

Whatever your reverse gear needs →

The Snow & Petrelli Mfg. Co.
156-B Brewery St.
New Haven Conn.



put it
up to
old man
Joe

Measuring and Rating

(Continued from page 92)

In the year book are published tables of time allowances which are derived by the formula $150 - \frac{15,000}{\text{Rating}}$. These tables give the

time allowance in seconds per nautical mile for all ratings from 15 to 140. In order to compare the relative time allowance differences for several boats the tabular time allowance for each is selected from the tables according to the rating as determined by the measurement. The difference between these various tabular amounts is then used and multiplied by the number of miles in the proposed race which will give the total time allowance to be allowed. Where the measurement has been carefully made and the time allowances properly determined it will be found that the boats will finish in close agreement with the basis on which the rules were established.

When the rating formula was first conceived it was based on the use of an arbitrary constant which is 4.167. In order to determine whether your boat performs better or worse than the average under the rules the rating may be divided by this quantity 4.167 and the result will give the theoretical speed in nautical miles per hour which the boat should be capable of in still water. Our case where the rating is 38.2 will be found to call for a speed of 9.16 nautical miles per hour. As it happens the actual speed of the boat in repeated tests is 8.68 knots, which is very close to its theoretical maximum. The difference is less than $\frac{1}{2}$ mile per hour and it is quite probable that the boat in question would stand a very good chance of winning any races in which she might compete. Naturally such other factors as proper navigation and boat handling also enter in the result, but are not considered in this discussion.

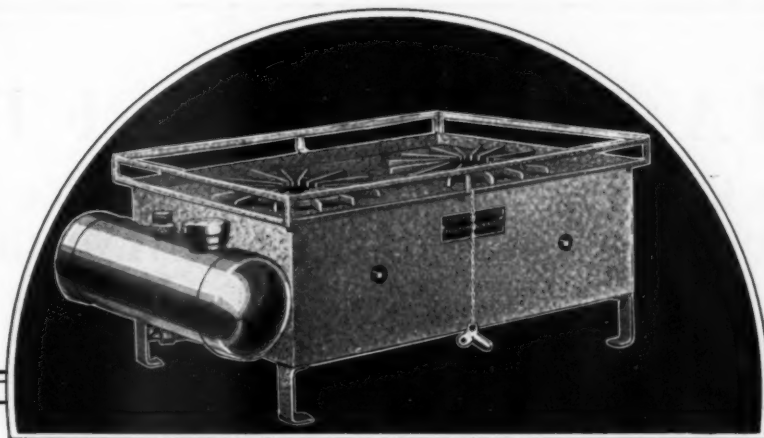
Other classes of boats are raced and rated under generally similar rules, there being one important point of difference. Boats of the V-bottom type, or those in which the section is a straight line or nearly so from the keel to the chine have the depth C taken at a point which is one-quarter of the waterline beam instead of one-fifth as used in round-bottom boats.

The definitions of various types of boats which will be met with can in general be considered to be as follows: A cruiser is a motor boat whose rating is between the limits of $5\frac{1}{2}$ and $7\frac{1}{2}$ times the square root of the waterline length. In addition minimum head room restrictions are provided in the rules as well as requirements as to plumbing, cooking arrangements, and other outfit. An express cruiser is a boat which would ordinarily be defined as a cruiser except that the head room restrictions are modified and that the rating exceeds $7\frac{1}{2}$ times the square root of the waterline length. A speed cruiser is one in which the rating is permitted to exceed the limits of 15 times the square root of the waterline length. The formula for figuring the ratings of express cruisers, speed cruisers, and open boats shall be 18 times the cube root of the square root of the load waterline length times the horsepower divided by the midship section. It will be noted that this is slightly different from the rating formula for cruisers of division 1.

Open boats are classified as those weighing 60 lbs. or more per rated horsepower and those boats which are not included in the cruiser, displacement racer or hydroplane classes. Displacement racers are boats which weigh less than 60 lbs. per horsepower and methods are provided in the rules for determining whether the boat will fall in one class or the other. Hydroplanes are racing boats in which the propeller acts in or against the water and has one or more of the following characteristics. One or more breaks in the longitudinal continuity of the immersed surface. An immersed section of transom having an area of more than 60 percent of the immersed midship section. The full text of the racing rules amplifies these definitions and is obtainable through the proper agencies of the American Power-Boat Association.

English Diesel Yacht Sold

The English twin screw Diesel driven yacht Ara has just been purchased by W. K. Vanderbilt through the firm of Tams & King. Ara was designed and built in England in 1917. She is of slightly over 1,400 tons displacement and was built to Lloyds highest classification. She will be the largest Diesel driven yacht in this country with two motors of 1,050 h.p. each. She has an enormous fuel capacity which gives her a radius of over 9,000 miles. A maximum speed of 15 knots can be attained. She will arrive in this country early in the summer and will be a notable addition to the fleet of larger boats here and her arrival will be looked forward to with interest. The boat was built primarily for deep sea cruising and was equipped with ice machines, evaporators, distillers, etc. A very powerful wireless installation is carried.



GALLEY *Auto* KOOK KIT

The practical and efficient galley stove for fresh and salt water craft

Specifications:

Size, 20 1/2" x 10 1/2" x 5 1/4"; legs 2" high; body made of galvanized iron, strongly riveted; all fittings galvanized or of copper or brass; tank made of brass, carefully tested; has rail around top to prevent utensils from sliding off. Burns ordinary motor gasoline—gives a steady hot blue flame that a thirty mile wind can not blow out. Equipped with a full sheet of galvanized iron for covering of table or bench on which stove is mounted. Has slots for legs to fit into. Pump and funnel with each stove.

Price, complete, \$20.00

If desired. Auto Galley Kook Kit can be furnished with the tank separate from the stove, and equipped with 15 feet of copper tubing so the tank can be mounted on deck.

Price, complete with 3 gal. tank, 10" pump. \$32.50
Price, complete with 1 gal. tank, small pump. \$27.50



A REALLY practical gasoline stove for marine use. Built especially for galley use—efficient—occupies minimum space—made of the very best materials obtainable—economical to operate—perfectly safe under all conditions.

Auto-Galley-Kook-Kit is not an experiment, but a time tested product built by men who have been building gasoline stoves for years. Designed in accordance with ideas of several prominent motor boat owners and builders and pronounced by them as the best galley stove on the market.

Handled by all the leading marine supply houses in the principal Atlantic and Pacific Coast cities.

PRENTISS-WABERS STOVE CO.

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		CANADIAN BOAT & ENGINE EXCHANGE, 43 Yonge St., Toronto, Ont., Canada

THREE BURNER MODEL

For those who wish a larger stove, we recommend the 3 burner model. Has three eight-inch grates and a tank; body size 30 1/2" x 10 1/2" and 36 1/2" x 14" over all, including rail and shut-off valve.

Price, with 1 gallon tank, pump and necessary copper tubing. \$35.00

The 4 burner galley stove has four eight-inch grates and is controlled by two master burners. Size, 22 1/2" x 20 1/4", and 28" x 24" over all, including the rail and shut-off valve.

Price, with 3 gallon tank, pump and necessary copper tubing. \$45.00



All stoves sold with separate tanks are provided with a shut-off valve at the stove so that it is not necessary to go to the tank to shut off the gasoline feed.

AUTO-KAMP-KOOK-KITS

For fresh water craft requiring a folding stove that can be removed from the boat and carried easily, the regular Auto-Kamp-Kook-Kits are offered. They are made in several sizes, from the One Burner Model to the Six Party Suit Case Outfit.

Auto-Kamp-Kook-Kit is made of sheet steel, strongly riveted, with a chocolate brown baked enamel finish. The tank is of polished brass, with pressure gauge, and fully tested. Has master burner and detachable key handle. Burns ordinary gasoline. A thirty-mile wind cannot blow it out.



Equipment shown in illustration consists of coffee pot, folding aluminum frying pan with cover, sugar and coffee containers. All the equipment packs inside making it as compact as a suitcase. Price, complete with equipment... \$15.50
Price, without equipment..... \$13.50

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26-Foot Special Runabout

We can still make good delivery on a few of these special mahogany runabouts. They are completely equipped in every respect. Powered with a model D Scripps motor, speed from 23 to 25 miles. With 100 H.P. Hall-Scott, speed 30 to 33 miles. A better outfit could not be had at any price. Full particulars will be sent upon request.

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We are prepared to figure with you on any kind of a high-class runabout, sedan or limousine proposition. Speed guaranteed, and Hacker-standard quality. Prints, specifications and price upon knowing your requirements. Satisfaction guaranteed.

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Arrangement has been made with Fellows & Stewart, of Wilmington, Calif., to build 26-foot Standardized Boat in California.

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P.



SPECIAL—4 H.P. Palmer for \$100⁰⁰

Just to prove that Palmer values cannot be equalled, we are offering for a limited time only the Palmer Model P-1 4 H.P. motor at the unheard of price of \$100 complete, including carburetor, coupling and muffler. This is a $4\frac{1}{2}$ " x $4\frac{1}{2}$ " single cylinder three port two cycle motor with jump spark ignition. It turns a 16" 3-blade propeller 475 R.P.M. and will give excellent service in runabouts, auxiliaries, fishing dories and work boats.

Get one of these motors before this offer is withdrawn. Write today.

Palmer Engines are built for every type of boat, 2 H.P. to 80 H.P. High speed, medium duty and heavy duty.

Palmer Engines are reaping the reward of more than a quarter century of honest manufacturing and fair dealing. Year in, and year out, Palmer popularity grows as new buyers are added to the hundreds of boatmen who are operating Palmer Engines with supreme satisfaction.

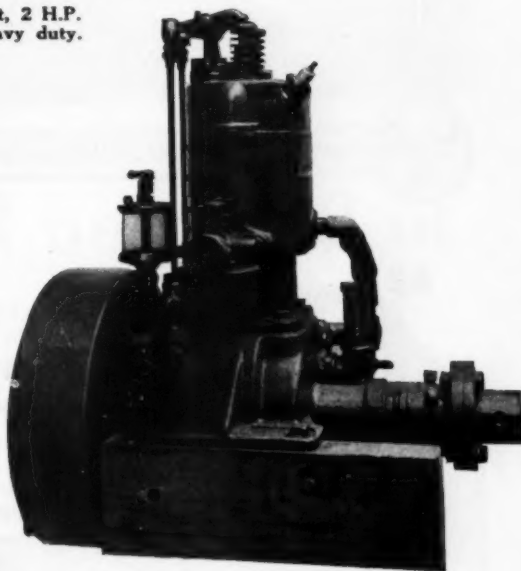


\$700⁰⁰

Model VH, 14-16 H.P.

A high speed engine with enclosed overhead valves and overhead camshaft. Equipped with starter, generator, battery, high tension magneto, jump spark ignition. Four cylinders, cast en bloc.

There isn't a handsomer, smoother running or more up-to-date engine on the market than the Palmer Model VH.



\$98⁰⁰ Model YT, 2 H.P.

A four cycle valve-in-head motor designed especially for yacht tenders and other small boats. Weight 95 lbs.

The Palmer NR2, 10-12 H.P., has been selected for standard equipment in the 26 ft. shoal draft runabout built by American Balsa Co., Long Island City, New York. Experienced boat builders know that the Palmer Engine delivers maximum power and satisfaction at minimum cost.

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Kill it before it happens.
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"The CAPITOL"

MARINE UNIT POWER PLANT

COMPLETELY ENCLOSED — COMPLETELY EQUIPPED

If you own or are planning the kind of a runabout or cruiser that deserves a really excellent power plant, you should know more about the Capitol.

There isn't a smoother, quieter running marine engine. Vibration and noise are eliminated by perfect balance, wide-faced helical-cut timing gears, force feed lubrication, ball bearing universal joint, three point suspension, and many other improvements.

Delco ignition. Atwater-Kent two-unit starting, lighting and generating system. Willard storage battery. Stromberg or Schebler carburetor. Instrument plate and all other necessary equipments of highest grade.

Bore 4 1/2"

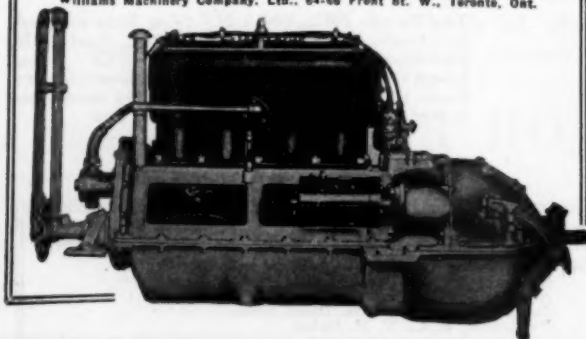
Stroke 5 1/2"

High Speed Model 60-65 H. P. at 2000 R. P. M.

Medium Speed Model 30-34 H. P. at 1000 R. P. M.

Write today for complete description and prices

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Lorraine a Speedy 16-Foot Runabout

(Continued from page 29)

HARDWARE & FITTINGS

Steerer: To be of the drum type with a 15-inch wheel with or without controls. It is to have a 3/4-inch bronze cable running through 2 1/2-inch sheaves, having one on each side forward and to run through necessary fairleads and two 2 1/2-inch sheaves opposite the center of the slot in the sliding type tiller. To be fastened to the oak and have a turn buckle in the line for taking up the slack.

Rudder: To be of bronze and to be mounted on two special type brackets, fitted with a sliding type tiller which is to be pinned to the rudder stock. The top bracket is to form a hanger bracket.

Strut: The strut will be of manganese bronze through bolted to the keel with six 3/8-inch bronze bolts.

Shaft Log: This will be of the bronze self-aligning type, either of the Hacker type or the Mechanical Devices Company type for 1-inch shaft. It is to be securely screw or bolt fastened to the keel.

Gas-Tank: This is to be of the built up or automobile type, and approximately of the size as indicated. To be of 20 gauge steel well riveted and soldered and securely chocked in place.

Deck Fittings: Will consist of one special bow chock, one 2 1/4-inch bitt, one large size clam ventilator, four special side ventilators, two 6-inch cleats, one 7-inch cleat, two 4 1/2-inch chocks, one after flag socket, one 4-inch deck plate over tank.

Hatch Cover: To be mounted with 1 1/4-inch piano hinges. To have a binder of 1 1/4-inch 20 gauge brass, all to be screw fastened and equipped with suitable hatch quadrants and lifting handles.

Stem & Stern: Stem is to have 1/2-inch half round brass shaped and securely screw fastened. The stern to be bound with 3/32 by 1 1/2-inch brass around the chine and up to the deck securely screw fastened.

Motor & Installation: Motor is to be a three cylinder 18-25 h.p. Pierce-Budd engine. Should less speed be desired a four cylinder Universal motor will prove very satisfactory. It is to be properly aligned and connected to the shaft, bolted to the foundation with suitable lag bolts. The exhaust is to be carried to the stern or discharged through stacks as desired. It is recommended that the exhaust be taken through the transom. Gasoline is to be taken through 3/4-inch copper tubing with a shut-off valve at the carburetor. Pressure must be used, and this can be supplied by means of a hand pump through 5/16-inch copper tubing. The water intake is to be of the screen type and to have a seacock valve inside with a hose connection to the pump. Overflow is to be through rubber hose connected to a special overflow fitting on the side. All wiring is to be made up with such wire as may be specified by the motor manufacturer. It is to be neatly and properly secured in place and the motor left in running order.

How the Radio Compass Aids the Mariner

(Continued from page 24)

As has been shown before, a single shore station after calibration can give a ship that is lost in fog her bearing from the compass station, two stations can give two bearings from which the ship can get her position by cross bearings and three stations can give bearings which check each other's accuracy. Near important harbors, therefore, are usually located a group of three stations connected together for intercommunication by land telegraph and telephone lines and equipped with small radio sending sets for emergency intercommunication in case of failure of the land lines. The compass helix is unsuited for sending radio messages and a small antenna of the usual type is installed at the stations for this purpose except where a conveniently located Naval radio station sending outfit can be operated from the compass station by remote control through a land wire. One station of each group is designated as the control station and gives necessary instructions to ships that request bearings. The other stations do not send messages to ships but merely take bearings on vessels when told to do so by the control station. The bearings obtained are sent to the control station, which transmits all the bearings to the ships. Complete instructions for making use of the radio compass are published on the pilot charts issued by the Hydrographic Office and current copy of these charts—they are published monthly and may be obtained at Branch Hydrographic Offices—should be consulted by anyone planning to use the compass. A very brief description of the actual method of using stations will not, however, be out of place here.

The ship wishing to know her position calls the control station of the group with which she wishes to work, using the radio in the ordinary way with the usual 800 meter wave length. After calling the station she sends the signal "Q. T. E.?" meaning "What is my true bearing?" The control station then tells all stations of its group to take bearings on the vessel and then

(Continued on page 102)



"Say Dad, that new Universal engine is a darling."

An engine you will be proud of

You can't talk with the owner of a boat equipped with a Universal engine that isn't proud to tell you about it.

A Universal engine is something to be proud of. It isn't only a certain amount of power stuck into a hull to keep the hull moving, but it will give you this power with the least attention and trouble and is clean and easy to handle.

We, here in Oshkosh, are as proud of this product as you who buy it and use it. We know it is a corking good motor. We have been making marine motors here for years, and making them so well that practically every country of the world knows the satisfaction of Universal engine service.

There is only one quality and one size of Universal Marine engine—the 4 cylinder 9-12 h. p. One of

the pioneers of its kind and the unquestioned leader of today. The Universal is adapted to 80% of them all—auto boats, launches, fishing boats, work boats—from 14 to 30 feet in length. It is equipped with electrical self-starter if desired.

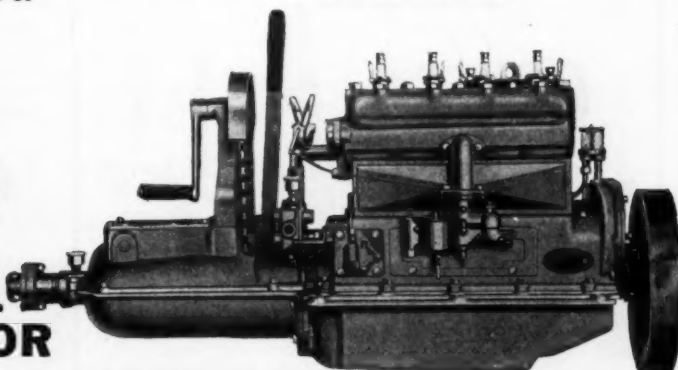
Revised prices downward on Universal Marine Motors were put into effect January 1st. It will pay you to send for the Universal catalog today and get all the facts that will make you look forward with genuine enthusiasm to the ownership of a boat equipped with a Universal engine.

Universal Motor Co., Oshkosh, Wis.

Not connected with any other firm using the name "Universal"

Also manufacturers of Universal 4-K.W. and Unimote 2-K.W. electric generating plants.

Universal
4 Cylinder
9-12 H. P.
MARINE MOTOR



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For All
Sizes of Boats
From 14 ft. to 62 ft.

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Engine Value

Engine value means to the experienced motorboatmen the annexing of power, consistency of service, accessibility, simplicity and completeness of equipment, not to mention pleasing design and appearance.

That expresses NIAGARA ENGINES.

The popularity of these engines can be traced directly to the fact that they represent a degree of mechanical perfection and marine engine value long sought after by the boating public.

The NIAGARA "Special" is 9-15 h.p., 4-cyl., 4 cycle, for OPEN BOATS, RUNABOUTS AND SMALL CRUISERS.

The NIAGARA E-2 is 12-14 h.p., 2-cyl., 4 cycle, for FISHING AND HEAVIER SMALL BOATS.

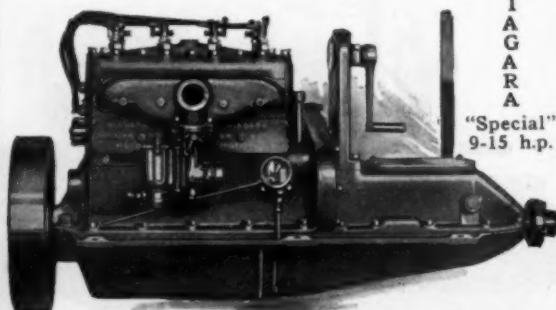
The NIAGARA E-4 is 20-30 h.p., 4-cyl., 4 cycle, for FISHING, LIGHT CRUISERS AND SPEED RUNABOUTS.

The NIAGARA D-4 is 40-60 h.p., 4-cyl., 4 cycle, for COMMERCIAL BOATS, TUGS, ETC.

The NIAGARA D-6 is 60-120 h.p., 6-cyl., 4 cycle, for EXPRESS CABIN CRUISERS.

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AGENTS: SOME VALUABLE TERRITORY NOW AVAILABLE

How the Radio Compass Aids the Mariner

(Continued from page 100)

signals her to go ahead by sending the letter "K." The ship then transmits her own radio call for 30 seconds, makes dashes each of five seconds duration, followed by the ship's radio call for one minute and terminates with the signal "K"—"Go ahead." If satisfactory bearings are obtained, the control station will get them from each compass station of the group and transmit them to the ship, otherwise a repetition of the test will be requested. Transmission of the bearings to the ship is made by using the signal "Q. T. E." meaning "Your true bearing from," followed by the name of the compass station and the true bearing spelled out in degrees. After receiving all the bearings the ship repeats them to the control station, using numerals instead of spelling out the numbers in words. In this way errors and misunderstandings are avoided. In cases where a ship gets a bearing that is obviously 180° in error, the trouble is due to the station's inability to tell on which side of the station the ship lies. A ship receiving such a bearing should request the reciprocal bearing from the station in order that the proper corrections may be applied to it. The ship should never attempt to apply a correction of 180° to bearings of this sort, as to do so disregards local errors at the compass station and may lead to an error of as much as 30° in the bearing.

The work done in the radio compass stations is of an exacting character and naturally necessitates a well housed, well fed, and contented crew. In some of the stations located in towns, such as for instance Cape May, New Jersey, the crew lives in the town, but most of the remote stations have comfortable quarters for the chief petty officer in charge and barracks for the men. A standard type of barracks building has been developed by the Bureau of Yards and Docks which admirably furnishes the required accommodations for both the chief and his men. The upper floor of these buildings comprises a flat for the chief, while the ground floor is the crew's quarters. An illustration of the barracks at Cape Henlopen shows how attractive the buildings are.

Parallel Sailing

(Continued from page 40)

By computation:

Formula, D Lo = Dep. sec L	
Dep 367	log. 2.56467
sec L 21°15' S	log. 10.03058
D Lo 393.8	log. 2.59525
D Lo = 6°33'.8 W	
Lo left 37°16' W	
D Lo 6°33'.8 W	
Lo in 43°49'.8 W	

By inspection:

Enter Table 2, with Lat. as course. At p. 537, C 21°, look in Lat. column for number equaling Dep. Nearest agreement is 366.9, which is close enough. Against 366.9 in Lat. column, read 393 in Dist. column, which is the D Lo. Now look on p. 575, C 22°. Against 367.2 in Lat. column, find 396 in Dist. column. Thus the change in Lo for 1' change in Lat. is 3' nearly (the figures in the Lat. column not precisely agreeing with our Dep.). We may take $\frac{1}{4}$ of 3' for 15' of Lat., and add about .7 to the D Lo found under 21°, making our D Lo 393.7 = 6°33'.7 W.

Note: Form the habit of always marking the D Lo East or West. It is a safeguard against applying it in the wrong direction. If the Lat. exceeds 45°, enter Table 2 at the bottom of the page, and remember that the Lat. and Dep. columns are reversed, as in plane sailing.

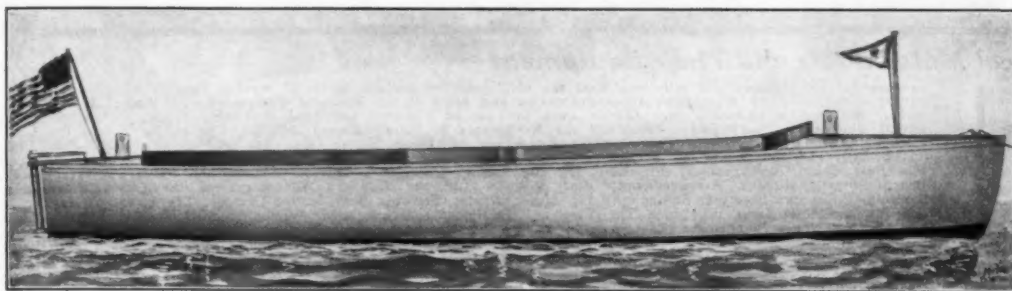
For Practice

Example 38: X is East of Y, and both are in Lat. 15°45' N. The Lo of X is 55°17' W. The Dist. from X to Y is 399.4 miles. What is the D Lo and the Lo of Y? (Ans.: D Lo 6°55' W., Lo in 62°12' W.)

Example 39: A vessel in Lat 40°29' S. and Long. 49°16' E, sails to B in Long. 41°59' E, and on the same parallel. What is the Dist. sailed? (Ans.: Dist. 332.4 when sailing along a parallel, Dep. = Dist.)

Example 40: A vessel takes departure from Five Fathom Bank Lightship and sails East 1239.6 miles. Required, the Long. in. (Ans.: Lo in 48°5' W.)

26 Ft. Shallow-Draft Motor Boat with INDESTRUCTIBLE STEEL HULL



26' x 6'6" x 11" Draft Galvanized Sheet Steel Hull

Here is the ideal shoal-draft motor boat for pleasure or commercial use on rivers, bays, canals, lakes and coastwise waters. Staunch and sturdy for heavy duty work,—practically indestructible under conditions that would wreck an ordinary boat,—stiff and seaworthy enough to ride the waves like a cork,—you'll find this boat suited for every kind of ordinary or extraordinary service.

This is a full tunnel boat with the propeller protected from damage because it operates wholly within the tunnel. Two heavy oak skids running lengthwise on the bottom protect the hull in passing over sunken logs, rocks, sand bars, or when run ashore.

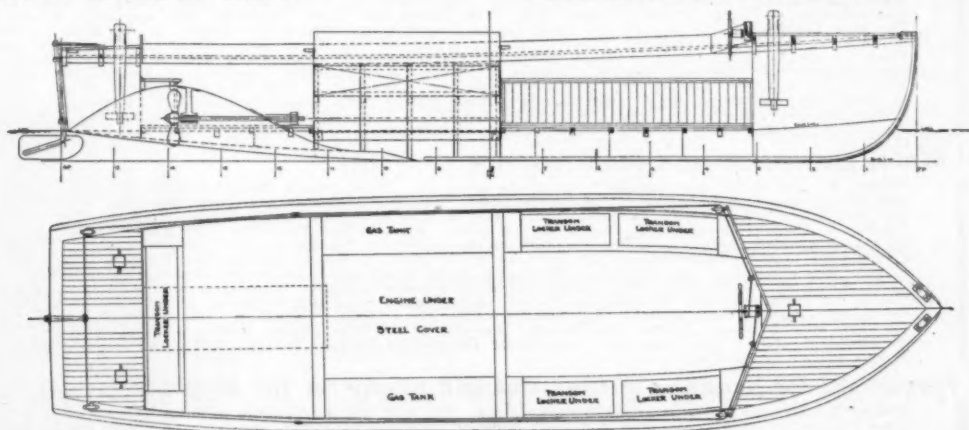
Four watertight bulkheads of galvanized steel divide the hull, two of which act as collision bulkheads, the other two forming a watertight and fire-proof engine compartment amidships. Engine compartment is covered with hinged steel hood.

Forward cockpit measures 6 ft. x 7 ft. and aft cockpit 6 ft. x 5 ft., easily accommodating 12 to 14 passengers. Deck, combing and all other woodwork are best selected material.

The motor equipment is a 10-12 H.P. Palmer Model N-R2, bedded on two longitudinals and four transverse steel girders, with reverse gear, bronze shaft and bronze propeller. Any other engine can be supplied by special arrangement.

This boat is built by one of the strongest boat-building organizations in the business. Thirty boats of similar design were built for a foreign government during the war, as well as hundreds of life boats and other craft.

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MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom vs. Sharp Bilge; What are the Advantages of Flare? Raised Deck vs. Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantage of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The \$1,000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propeller-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Beating for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it: Advice for the Beginner; Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Cruise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

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Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsuccessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed vs. Heavy Duty; Long Stroke vs. Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers vs. Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside?

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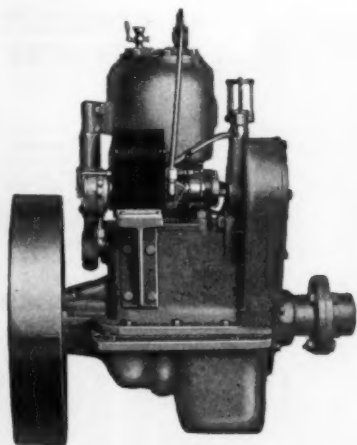
If your boat's in pretty good shape in every other way you certainly should give her (and incidentally yourself) the very best marine motor obtainable — that's the Kermath.

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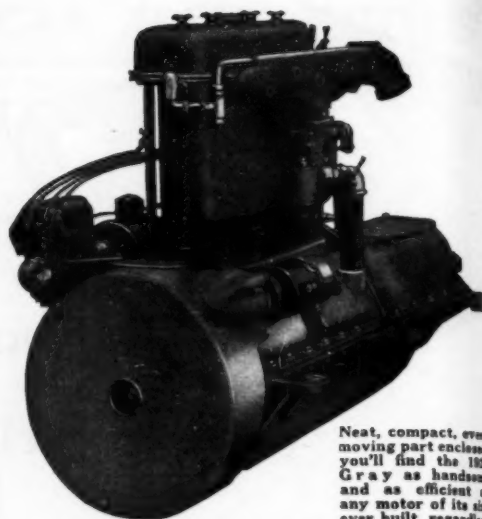
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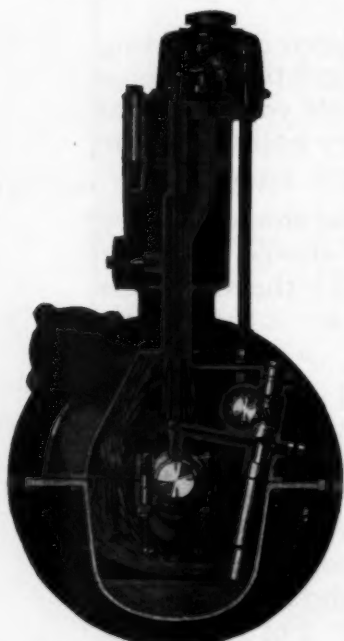
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THE 1922 Gray is neat in appearance, compact, and can easily and inexpensively be installed in runabouts 20 to 30 ft. in length; small cruisers up to 34 ft., also work boats.

Note the rigid one-piece base with Reverse Gear enclosed. The gear is automatically lubricated with positive gear pump that lubricates all other internal working parts of the engine—no grease cups or thick transmission oil used.



Neat, compact, every moving part enclosed, you'll find the 1922 Gray as handsome and as efficient as any motor of its size ever built, regardless of price



The splash lubrication is supplemented by force feed pump lubrication to all moving parts

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Oil filler is conveniently located on top of engine with duct leading to Crank Case. Rocker arm shaft is hollow and automatically supplies oil to Rocker Arms. Oil is forced under pressure to the three main bearings, and to the connecting rod troughs.

In brief, the Gray Oiling System leaves nothing to chance. It is unfailing at all engine speeds, and all oil is kept inside the engine, and not thrown around the boat or on its occupants.

The fly wheel is enclosed, affording safety and cleanliness. Bilge water cannot be thrown by the fly wheel. Every working part is enclosed; even the push rods. Due to the special design of the Cam Shaft, push rods and rocker arms, scarcely a sound can be heard with ear close to the engine.

The smooth, quiet operation of the new Gray improved Valve-in-Head at all speeds from 200 to 2000 would compare favorably to an electric motor. It runs most economically on low grade gasoline and satisfactorily on kerosene.

Note The Big Crankshaft

The diameter of the main bearings are: Front $2\frac{3}{4}$ ". Center $2\frac{1}{16}$ ". Rear 2". The lengths are $3\frac{3}{4}$ ", $2\frac{1}{2}$ ", $2\frac{1}{2}$ " respectively. Crankshaft is 40-50 point carbon steel forging, heat treated and ground.

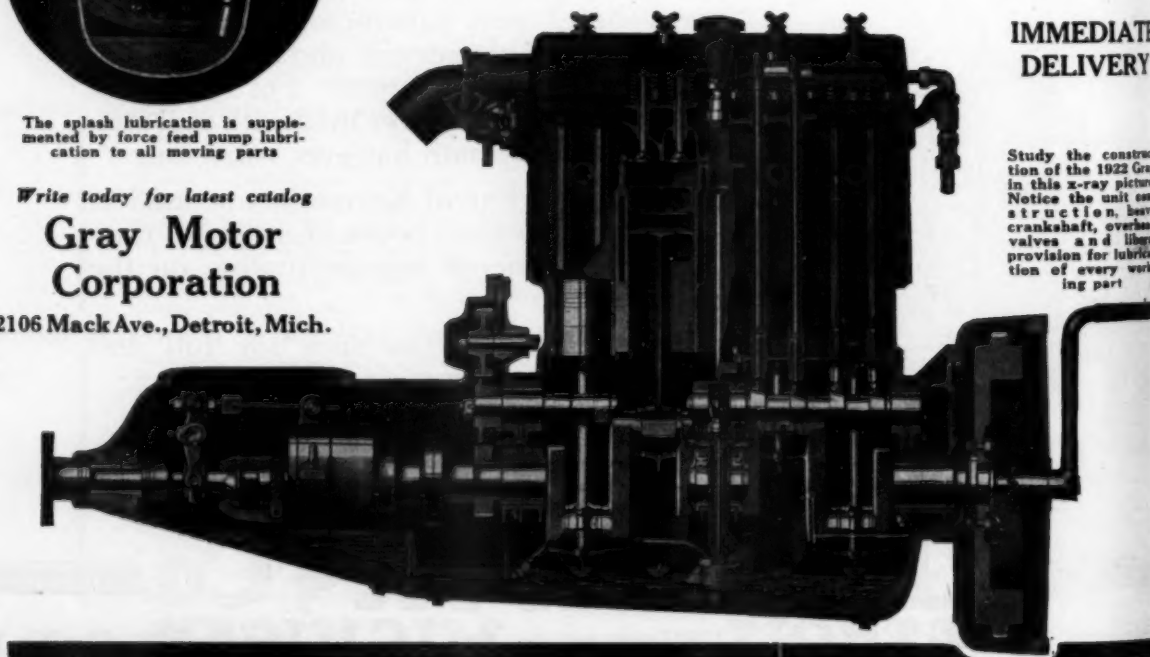
Special attention is given to the balancing. The shaft is put in rotative as well as static balance on an Akimoff Dynamic Balance Machine, reducing vibration to a minimum.

Bosch Magneto with Impulse Starter, also Bosch two unit Starter and Generator is used.

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Study the construction of the 1922 Gray in this x-ray picture. Notice the unit construction, heavy crankshaft, overhead valves, and liberal provision for lubrication of every working part

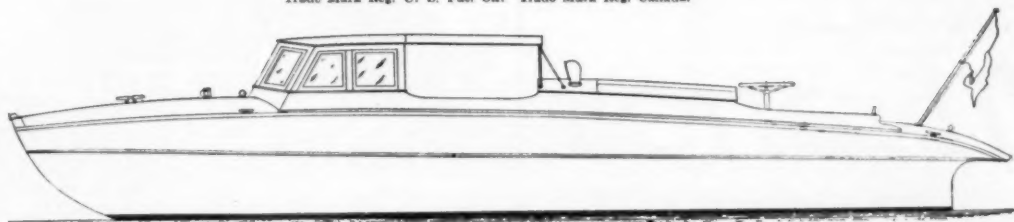


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THE ability of Sea Sleds to carry heavy loads at high speed has enabled us to develop a new type of boat in the 24' x 6' Sea Sled Coupe Yacht Tender, the first of which is now being built at our plant for Col. James Elverson, Jr., Publisher of the Philadelphia Inquirer.

No other yacht tender ever built has combined in equal degree the characteristics of large passenger capacity, roominess, comfort, weather protection, seaworthiness, safety and high speed found in this boat. The coupe enclosure of the front of the forward cockpit provides the same protection as an automobile coupe or limousine for inclement weather. The after cockpit provides a separate compartment for the operator and for transportation of the yacht's crew and stores.

In quality of workmanship and finish, this mahogany tender matches the finest yachts afloat. Speed according to power. Blueprints and full details forwarded on request.

SEA SLED DINGHY MEETING WITH UNPRECEDENTED DEMAND

The smallest boat to which Sea Sled fundamentals of boat design have been applied—the Sea Sled Dinghy—is already a marked success. Truly a universal small boat, equally suitable for dinghy, tender or outboard-motor boat. It combines the utmost in safety, stability, weight carrying ability, easy rowing and fast towing. Best for shore landing, wharf landing, fishing, hunting, camping, outboard motors and general utility. 8, 11 and 13 ft. in length, equalling 12, 14 and 18 footers in capacity.

Prompt deliveries on immediate orders. Write today.



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WHAT IS THE CRITICAL SPEED OF YOUR MOTOR?

When do you begin to experience the annoyance of excessive

Vibration

Lack of balance of crankshaft or flywheel plays a large part in the disturbing factor of vibration.

It can be eliminated by the motor manufacturer, if he will install an NWA BALANCING MACHINE, or do as some marine engine makers are doing, have his crankshafts balanced on one of our machines, by the shaft maker.

Don't suffer from this annoyance. Buy an engine that is accurately balanced.

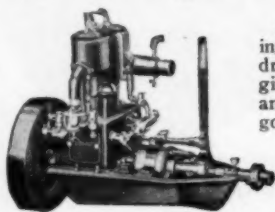


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Single Cylinder 4 H.P. "Bull Dog"	4 cyl. 15-18 H.P. "L M-4"
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UNIVERSAL PRODUCTS CO.

Doman Engine Division

Oshkosh, Wisconsin

Yacht Clubs Which Make Better Boating Possible

(Continued from page 21)

important matters. Never should the club members be asked to vote upon the usual and necessary club routine.

The by-laws should provide a means for calling special meetings. These are generally called at the discretion of the Commodore and he must call them upon the written request of five or more members. At special meetings of the club, only such action may be taken as is mentioned in the call for the meeting. The transaction of business which would come up at a regular meeting of the club, cannot be considered at a special meeting unless the intention to transact such business is specifically mentioned in the notice sent to all members of the special meeting.

As a rule, all active members are allowed equal voting privileges. However, in some clubs, voting is restricted to boat owners. In other clubs, on subjects dealing with the fleet, races, or other matters pertaining to the sea, voting is restricted to boat owners, while voting on general questions of the club's welfare and similar matters, is open to all members; boat owners, and non-boat owners, alike. In the case where voting is restricted to boat owners, specific regulations should be provided in the by-laws as to what constitutes a boat. No boat should be allowed voting representation unless she has been launched and is enrolled on the club books; nor any boat which has been out of commission for two consecutive years should be allowed voting power.

Most yacht clubs provide for a limited membership of active and resident members exclusive of honorary and life members. Some clubs provide that only a certain number of non-boat owners should be allowed to be elected as members of the clubs, while there is no limit on the number of boat owners. Some clubs are limited to 300, 500, or 1,000 members as the case may be.

Women who own yachts should be eligible for yacht club membership. They should be known as flag members and are required to pay the annual dues, but no initiation fee. Flag membership continues only during the period of yacht ownership and carries only such privileges as: the right to fly the club burgee; to enter club races, and to use the club stations and float.

Quite naturally, in the matter of the amount of initiation fees and annual dues practice varies greatly. Initiation fees range from ten dollars up to several hundreds. Regular dues likewise range from a minimum sum of a few dollars per quarter, up to several hundred a year.

Dues should be payable quarterly, semi-annually, or annually. The dues for active or resident members are generally much larger than those for non-resident and associate members. The calendar year should be the basis on which all dues are payable. Very often when dues are payable annually, members elected after the first of October are exempt from dues for the current year. Some clubs provide that new members elected after the first of August of any calendar year, are required to pay only half the dues for the calendar year of their election.

Members who are absent from the United States for a whole year, as well as members who go into the army or navy, should be exempt from their dues provided written notice is given to the Secretary of their intended absence for service. Generally, the Secretary, Treasurer, and sometimes the Chairman of the House Committee are exempt from regular dues. Honorary members are always exempt from regular dues.

Provisions for the payment of dues and the dealing with delinquent members cannot be too strict or too closely enforced. Dues should be payable in advance. If the dues are payable semi-annually, then they should become due and payable on the first days of January and July. The Treasurer should always bill members for their dues and their indebtedness on the very day on which they become due. Laxity of the Treasurer in billing members is very apt to become contagious in the members themselves.

Members should be considered in arrears from the day on which the dues are payable. Unless they are paid by each member within one month from the time they are due, the member should be notified by the Treasurer. If they remain unpaid for thirty days more, the Treasurer should again notify the member and post his name on the bulletin board of the club. Should they remain unpaid for another thirty days, the member should be suspended from the club, notified of the same, and his name posted upon the bulletin board.

Suspended members should be denied all privileges of the club. Provisions should be made for the reinstatement of suspended members. Some times this is accomplished by the payment of twice the amount due. In other instances, a penalty is provided by the Board of Governors.

The member who has remained in suspension for a period of sixty days from the date of his suspension, should be dropped

(Continued on page 116)

"THE MOTOR THAT CROSSED THE ATLANTIC"



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30-45 H. P. Medium Duty
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The Value of Engine Auxiliaries

(Continued from page 26)

to provide a path through which it may go and another one through which it may return. It will not flow in one direction only but the circuit must be completed so that it may return from whence it started. If the path of the current is interrupted at any point along its length all flow of current immediately stops, and will not be resumed until the circuit is once more completed. Copper wire in various sizes is generally used to form the conductor to carry electricity from the place where it is produced to the place where it is consumed. One wire is required to take the current there, which is called the lead and another is necessary to bring it back, and this is called the return. If there is any way by which the current may escape from the lead wire, and find a new path to the starting point other than the return wire a leak exists which is designated as a short circuit and aground.

The sources of supply from which electricity may be secured for ignition purposes are; dry cells, storage batteries, or magnetos. Dry cells produce their current by chemical action within them but are not very reliable or desirable where the demand for current is heavy because they have not the capacity to stand up for long periods of time. They rapidly become exhausted under heavy duty and will produce a weak spark insufficient for the purpose. They contain no liquid but merely a moisture from which they derive their name, dry cells. Storage batteries are also chemical converters of electrical energy but have the distinct advantage that they can be refilled to their original condition as often as is necessary. They contain a fluid electrolyte which serves to effect the chemical transition between the plates of the battery. The current is supplied from an electrical generator and changes the composition of the medium on the plates and the battery while it is being charged. During the discharge the change takes place in the reverse direction and liberates electric current again. This current is thus available for many useful purposes and serves for the ignition of the engine. The last form of ignition device is the high tension magneto which is a special form of dynamo producing a high tension electric current within itself and delivering it ready for ignition requirements. Irrespective of the source of current supply it is for all systems conducted to the firing device, or spark plug and there caused to jump across a gap with a sharp snappy spark which immediately fires the compressed gas with which it is surrounded.

The early gas engines used dry cell batteries and spark coils which were soon followed by the substitution of storage batteries for the source of current. Later with the development of the high tension magneto, this was added in addition and a double system was obtained. As these were both independent of each other a greater measure of security was obtained and greater reliability experienced. As the magneto proved itself many makers placed their entire reliance in this machine and discarded the battery systems entirely. As the modern machine required large quantities of electric current for starting purposes and auxiliary lighting service about the boat, a revival of the battery ignition methods naturally followed as the storage battery was again necessary for other work. The principal reason for the popularity of the magneto is the fact that it does not weaken with age but on the contrary will give a strong and powerful spark at all times, and a more powerful spark at high speeds when it is required.

The electrical property which causes the current to jump the gap at the spark plug is the voltage. In order to step up battery ignition currents from the low potential of the batteries to the high potential demanded at the spark plugs, an induction coil is necessary to transform the current to high tension. The path followed in a system of this kind is from one side of the battery to the switch, then to the coil, then to the interrupter or timer, and back to the other side of the battery. On the secondary side a wire must go to the spark plug. Fig. 37 illustrates this and it will be seen that a separate coil is required for each cylinder of the engine and the interrupter must have a separate binding post for each coil used.

In such cases where only one coil is needed for an engine of several cylinders a high tension distributor Fig. 38 is used in the secondary circuit. The function of this distributor is to switch the current from the coil to the proper cylinder as the engine rotates. A rotor or segment of the distributor is turned with the timing shaft and at the instant the high tension spark is produced it comes into contact or almost into contact with the high tension wire leading to the spark plug in the cylinder which is then ready to fire.

A general rule for timing an engine which uses individual coils and battery ignition is the following; determine the firing order and the direction of rotation of the roller in the timer. Next place the spark control lever so as to advance the spark about one-third of its travel. See that the piston in number one cylinder is at the top dead center of the compression stroke, and that one wire from the battery goes to the ground (a bolt or screw on the engine) another wire from the battery goes to the switch, then continues from the switch to the primary terminal of the coil, the

(Continued on page 116)

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EVINRUDE

Standard and
Lightweight
DETACHABLE MOTORS FOR WATERCRAFT

Racing Season Gets Under Way

(Continued from page 42)

Mo., with Panhard. Mr. Hammer is understood to have arranged the entry of a much higher powered boat than that with which he won last year and to stand ready to defend his title. President Wilde will also find many other opponents, for high powered runabouts from Minneapolis, Chicago and other Great Lake cities, together with a pair from the Fox Lake region in Illinois are expected to enter the runabout events.

So popular has become the racing runabout that a special class of these boats has been developed and a score or more of them, identical with the one now possessed by Mr. Wilde, have been built. This particular type will race in what is known as the 610 class for runabouts, but all of them will be eligible in the free-for-all contest at Peoria, in which no horsepower is barred.

Stage All Set for Mississippi Valley Regatta

Perched upon an auto trailer, Ethel X, a racing boat upon which the hopes of Charles P. Hanley are centered is being hauled to the different cities on the mid-west circuit by an automobile. Mr. Hanley is the champion of the 320 class, by virtue of victories in that class at Peoria, Ill., last July. He will defend this title at the official regatta of the Mississippi Valley Power Boat Association to be held again at Peoria on July 1, 3 and 4. Ethel X is a new boat, built by C. E. Padgett of Quincy, Ill. It carries the maximum power allowed in the 320 class. On trials here early this spring the new hull behaved in a fashion which warrants Mr. Hanley's belief that he will be able to retain for Muscatine the title he now holds. Her maiden race of this season was at Milwaukee, where, on June 14 at the Neptune Frolic an attraction staged in connection with the convention of the Ad Clubs of the world. At Peoria, Mr. Hanley will not only face Mr. Travis, who defeated Hanley last year, again but will be confronted by Van Dyke II owned by Walmsley and Osmus of Evansville, Ind., and possibly by Miss Vogler, a promising 320 class boat owned by F. D. Vogler, of Portland, Oregon.

A Gold Cup for Los Angeles

The handsomest and most valuable trophy ever put up in the west for motorboat racing will be contested for at Los Angeles. This is the De Mille Gold Cup, just offered by Cecil B. De Mille through the Los Angeles Athletic Club Motorboat Racing Association. Mr. De Mille, who is director-general of the great Famous Players-Lasky corporation and who for a long time had practical aviation for his principal hobby, is turning from the air to the water and enlisting over sports in the latter element, and this trophy is the result. It is generally believed that Mr. De Mille, who does everything he undertakes in a broad-gauge way, will build a speedboat and get into the game himself with the object of beating all records. At any rate he is showing keen interest in the further development of the exciting sport.

The De Mille cup, already in course of manufacture, was painstakingly designed by Paul Iribe, the distinguished French artist who has no rival and who has for years been on Mr. De Mille's art staff. The trophy will be 15 inches tall and in order to bring out the best possible effect the cup proper will be of sterling silver—a design of curling, white-capped waves. Upon this silver sea will ride a motorboat of solid gold, apparently driven at great speed and having the appearance of a fast craft in action on tossing waters. At the base of the cup will be a gold shield to bear the names of the winners, and in relief a flying seagull casting a golden shadow upon the cup. The base will be of exquisite Catalina Island green marble. The whole constitutes a masterpiece of its kind. It is being made under the direction of S. Nordlinger & Sons, Los Angeles.

In accordance with Mr. De Mille's suggestion the race will be an annual free-for-all, to be held the first Sunday before Labor Day in or adjacent to Los Angeles harbor; to consist of three heats to be run on the same day, each 33 miles, and the total elapsed time to determine the results—the boat making the fastest elapsed time in 99 miles winning. The first heat is to start at 11 and the others are to follow with not to exceed half an hour between. There will be a race-horse start, entrants to draw for pole, and the pole boat to start the pace not faster than the slowest boat. Entries close July 1, and entry fee \$50, to be returned to each boat actually starting.

"It gives me pleasure to offer this trophy," said Mr. De Mille, "for I am sure that the development of motorboat racing in Southern California will be of general good. The west should not be behind the east in these matters and I can think of no reason why the Pacific Coast, and especially Southern California, should not be pre-eminent in water sports. In order that the winner each year may have a more lasting memento of what I hope may be a most interesting event it will be my pleasure to provide an appropriate gold medal which will go to him as his personal property. I hope this effort on my part will be instrumental in the development of this sport of kings in Southern California."

California Boat Notes

E. R. Abbott, Secretary of the Los Angeles Yacht and Motorboat Club announced recently the plans of the organization for the annual cruise, which will take the sportsman to the Isthmus of Santa Catalina this season. Assorted contests and sports will be included in the three-day program. Swimming will hold the attention of the clubmen on the second day, while racing will be pulled off on the third. American Power Boat Association rules will be observed in the latter event.

The buildings at the Isthmus are in bad shape and it is thought unsafe by the motorboat officials to hold a dance there, so the event will take place at Avalon.

Herb Cornish, owner of the neat looking Pow-Wow, a motorboat, was awarded Admiral Albert Soiland's trophy for having the best appearing boat at the annual inspection day of the Newport Club, held recently.

The holding of the annual inspection of the Los Angeles Yacht and Motorboat clubs craft has been deferred this year, and may be canceled altogether, inasmuch as the boats are at two different anchorages.

Racing Events Programmed

Racing will be resumed at Coronado Beach this year, with a bang! A ten-thousand-dollar club house is to be erected, with numerous floats and other equipment for the convenience of Club members and visiting boat owners. The large plot of ground for the Clubhouse was acquired recently from John D. Spreckles. There will be at least three months' activity in water sports of all kinds, it is stated.

Great Racing Harbor Planned for Southern California

One of the greatest Motorboat and Yacht Harbors in America, and probably in the world, it to be in Los Angeles, according to reports of negotiations to that end, which have just recently become public. Ten million dollars worth of craft, it is estimated, will be drawn to this new harbor from both coasts of the United States, and from all over the world. It is stated, upon good authority, that in beauty, racing facilities and general desirability, it will equal anything in the United States, and is expected to even surpass in the magnificence of its appointments and the magnitude of its events even the great English meets at Cowes. Los Angeles skippers have united in pronouncing it the greatest undertaking of its kind in the world.

Portuguese Bend, in Palos Verdes, for many years famous among California seamen as a natural anchorage is the site selected for the new project, and back of the development are the directorates of both the Los Angeles Motorboating and Yachting Association of the Los Angeles Athletic Club, and the California Motorboat and Yacht Club Association.

Here are some of the points covered thus far in the proposition:

First, the clubhouse and its extensive grounds, the harbor development and everything connected with the project shall be with the purpose of making the Palos Verdes harbor one of the greatest in the world.

Second, the development of the project includes a ten acre site and a magnificent clubhouse.

Third, the north point of Portuguese Bend in Palos Verdes is selected as the probable site.

Both Southern California nautical associations, it is stated, are backing the proposition to the limit.

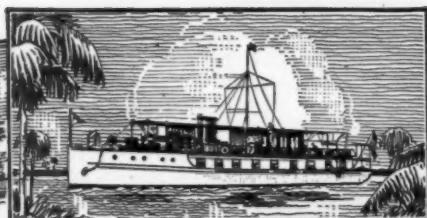
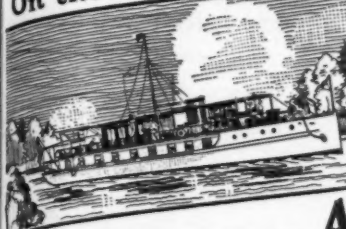
Boat Club Celebrates Birthday

The Newport Harbor Yacht and Motorboat Club, of Southern California, celebrated its fifth birthday anniversary, recently, with a dinner-dance and general celebration at its clubhouse. Director W. H. White was in charge of the big birthday cake, which was cut with all due pomp and ceremony. On the speaking program, were Commodore Frank Smith, ex-Commodore Claude D. Putnam, and ex-Commodores Andrew Wilson and Albert Soiland. Dr. Soiland is the father of the Newport Club, and his talk dealt with the Club's beginnings. Commodore Smith outlined the summer motorboating and yachting program at Balboa Beach, planned by the Club.

The Newport Club is active the year around, and regularly presents social and boating events each week-end. The recent event was the most pretentious function it has held in a long time. In addition to Commodore W. S. Fenton, are Directors, Dr. Conrad Richter, Al Woodill, J. H. Breckenridge and W. H. White. The club is rapidly becoming the motorboat and yachting center of Southern California.

(Continued on page 114)

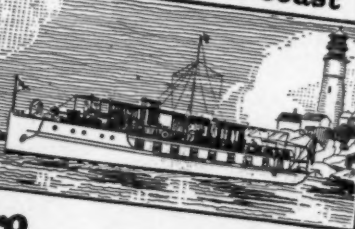
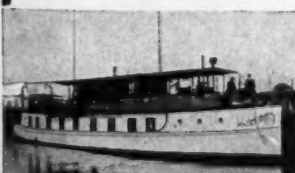
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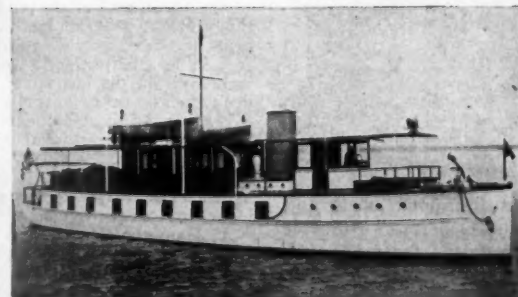
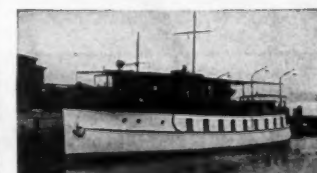
In Boats of Other Types

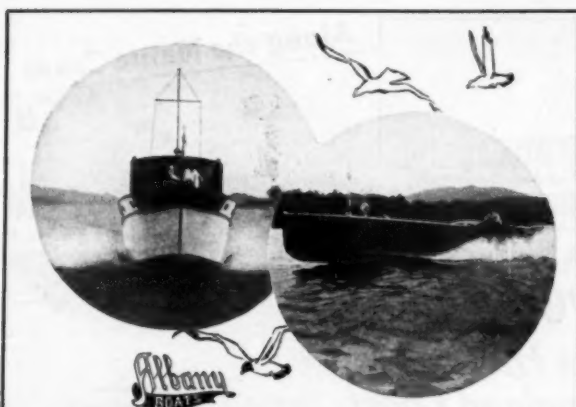
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Racing Season Gets Underway

(Continued from page 112)

Tuttle Speeds into Fame

Hal Tuttle, of Buick racing fame—whose name is familiar in automobile speed-circles all over the country—has developed notoriety unheard of in marine circles of Southern California, in the past few years. He has broken into champion row, over night, by winning a race for eight-hundred inch displacement boats in Los Angeles Harbor, recently with his new speed-craft, Valve-in-Head, and developing the speed of thirty-three and seventy-seven hundredths miles per hour.

Before Ray Prewett built the Valve-in-Head, Tuttle was worse than a novice at the motorboat game. He didn't know the difference between the prow and the stern. That he hurdled into the championship class in such a brief time is quite an honor for the young man.

Incidentally Tuttle won the Howard trophy, and has been busy ever since the race explaining to his friends that he had no idea of winning the event from such veterans as Frank Garbutt, Ralph Hamlin—also a famous auto racing man—and other notables.

New Bedford Race Week

The program of events to be conducted by the New Bedford Yacht Club during the week of August 14 to 19 has been announced and the full week will be occupied by water-sports and races for all classes of boats. The program which will be held at the Padanaram Station of the club at South Dartmouth, Mass., will keep the local yachtsmen on the go continuously. On Tuesday, August 5, among other events, will be a chance race for motor boats for the cup donated by MoToR BOATING. A card to the Regatta Committee, P. O. Box 407, New Bedford, Mass., will bring a booklet of the week's events to those interested.

Meet on the Hudson River

The annual meet of the Waterway League will be held at the New York Motor Boat Club on the Hudson River on July 22 and 23. These dates coincide with the date of the club's annual long distance race to Newburgh and return, which will be run under the sanction of the American Power-Boat Association. While the contestants in the long distance race are underway a program of interesting stunt races has been arranged to occupy the time during the day for those who remain behind. Captain E. L. Kieger has donated a series of wonderful plaques as prizes for the long distance race and it is expected that this will prove to be one of the most popular races of the summer. The annual meeting of the Waterway League will be preceded by a dinner which will tax the capacity of the ample galley of the club. It is expected that between 300 and 400 visiting yachtsmen will be accommodated at the club on the occasion of this meeting.

Buffalo and Hamilton Dates Changed

The events of both Buffalo and Hamilton have each been scheduled a week later than was originally planned. When no challenge for the Harmsworth Trophy was received this year at the Detroit Yacht Club, this organization decided to change the dates for their Gold Cup, Wood-Fisher and other events from the dates of August 26 to 28 and 29, originally chosen by them, to September 1 to 4, which were the dates on which it was planned to hold the contests for the Harmsworth Trophy had a challenge been received. This change in dates by the Detroit Yacht Club left the dates of August 24, 25 and 26 open. In as much as there existed a confliction in the racing dates at Buffalo and the second week of the Pageant of Progress races at Chicago, it has been decided that the races of the Buffalo Launch Club will be held on August 17, 18 and 19, and those at Hamilton, Ontario, on August 24, 25 and 26.

The events at Buffalo promise to be particularly well supported this year. A program has been arranged which will include three heats for the Leary Trophy, open to hydroplanes of at least 20 feet in length, powered with motors not exceeding 1100 cubic inches piston displacement; a race for the 610 cubic inch out-design class; a race for runabouts powered with motors not exceeding 2250 cubic inches piston displacement, and the three heats for the International World's Championship Trophy recently presented by the National Association of Engine and Boat Manufacturers to the A. P. B. A. This latter event will be open to hydroplanes of over 20 feet in length and not less than 2250 cubic inches piston displacement.

At Hamilton, Ontario, on August 24, 25 and 26, the fifth race for the Fisher-Allison Trophy will be held. This race will consist of three heats of fifty miles each and will be open to displacement runabouts of over 32 feet in length, powered with stock marine motors not exceeding 3000 cubic inches piston displacement. In addition to the races for the Fisher-Allison Trophy at Hamilton there will be events for other types of runabouts and cruisers.

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Consider this carefully before you equip your boat, for on it depends the satisfaction you will secure. A few pounds one way or the other may mean just the difference between dependability and trouble.

To make this clear to you, we have just issued a handsome edition of Specifications for the Spinaway showing its Design, Construction, and Materials. These Specifications include a blueprint of the motor and place before you every detail of the rugged mechanical construction. Send for a copy and let it answer your questions.

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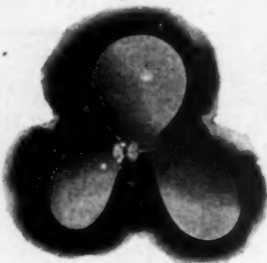
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The Value of Engine Auxiliaries

(Continued from page 110)

other primary terminal of the coil is connected to the timer on the terminal then in contact with the roller, and finally the secondary wire to the spark plug.

Should it be a four-cylinder engine with which we are dealing the firing order will be either 1-2-4-3 or else 1-3-4-2, that is, number 2 or number 3 cylinder will receive the next power impulse after number 1, depending upon which series is correct. The proper order may be determined by turning the engine over slowly by hand and observing the sequence in which the valve springs are lifted. The order in which the springs raise will follow the same rotation as the firing order at the spark plugs. Having determined the order the remaining primary wires from the coils can be connected to the timer in the order in which the power strokes occur.

If a single unit coil is used the above remarks will guide the operator in placing the secondary wires on the distributor.

In the case of a high tension magneto the wiring is exceedingly simple as shown in Fig 40. It is merely necessary to get the top center of the compression stroke in number one cylinder, observe the position of the distributor sector, and place the spark plug wires according to the firing order and the direction of rotation. It is always advisable to observe the instruction book issued by the manufacturer of the engine together with the instruction book dealing with the ignition appliances. The average repair man will be called upon to look after a wide variety of ignition systems since many engines are still using the simple battery and coil methods, while many rely solely upon the high tension magneto. Frequently the newer engines will be found to use the improved battery systems with the high tension magneto entirely eliminated.

The question is frequently asked whether the automobile engine can be adapted to marine service. This can only be answered in the negative as the service for which they are designed is entirely different for the service which they might experience in a boat. The changes necessary to adapt them are so many and radical that it is not advisable to undertake them as the cost of the alteration will in the end exceed the cost of a suitable marine engine. Due to the fact that the automobile engine is not designed to carry full load all the time the motor is likely to run hot and give bearing trouble. The lubrication systems are such that the oil will not be equally distributed to all cylinders in marine service. They are not fitted with reverse gears or thrust bearings. The crankcases are not adapted to marine service since they are usually made of aluminum or sheet steel. The action of the bilge water on these is to quickly corrode them and destroy the usefulness of the machine. The fastening to the engine stringers is difficult due to the location and arrangement of the supporting brackets. If a new crankcase of a different material and shape is to be made a special engine bed will also have to be constructed at great cost. These are only a few of the objections to the use of the automobile engine in the boat. Similarly the aviation engine while an excellent machine for its designed purpose is altogether unsuited to marine work on account of the differences in the nature of application. Its extreme lightness makes it a short life motor, which in aeronautic service is not allowed to weigh against it. No boat can afford to install a machine which requires to be entirely pulled apart and rebuilt after every hundred odd hours of service.

Yacht Clubs Which Make Better Boating Possible

(Continued from page 108)

from the club rolls and so declared at the next meeting of the club. The name of a member expelled for non-payment of dues should not be allowed to be proposed again for membership for a period of one year from the date of his expulsion.

In the matter of resignations, provision should be made in the by-laws that all resignations must be in writing and forwarded to the Secretary of the Club. A member in arrears for dues or other indebtedness has not the privilege of resigning, unless his indebtedness is paid in full. A member in good standing may resign at his own discretion and at a time specified by him in his letter of resignation. The officers or members of the club have no power to refuse or decline to accept the resignation of a member in good standing. It is one of the members' privileges to be allowed to resign. Resignations take effect automatically from the date of the member's resignation or at a time he specifies and do not have to be accepted by the club or officers to become effective. Resignations received after the date on which dues are payable do not relieve the member presenting the resignation from his regular dues for the current period.

(To be continued.)

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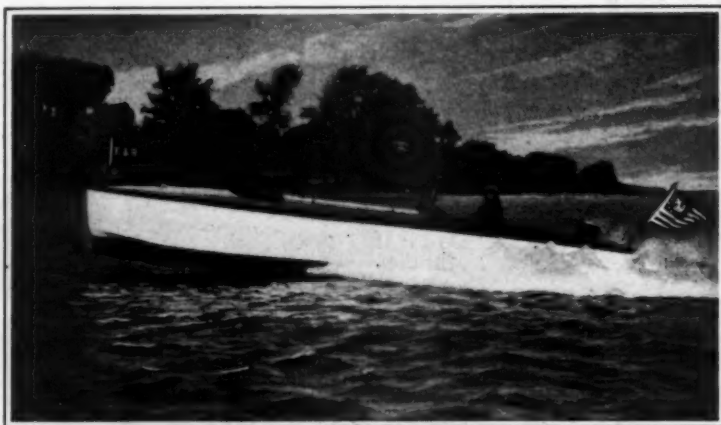
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When the fragrance of the fresh mown hay and the dust from the roads make us sneeze—

When the ninth hole on the golf course seems twenty miles long—

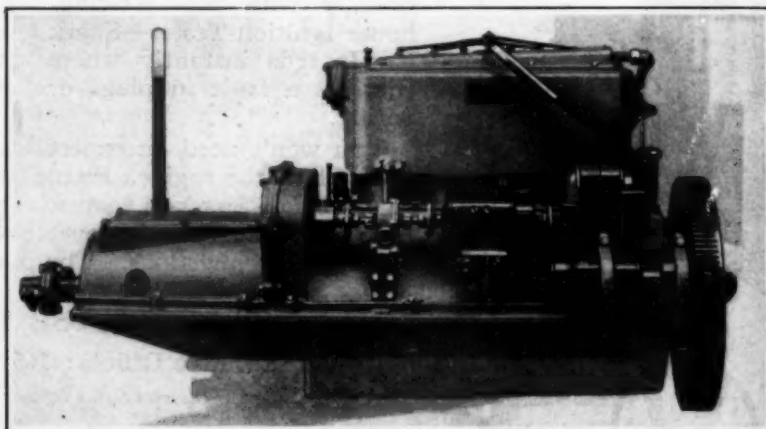
When the nice cool shower bath reacts and makes us hotter yet—

When we have worked our brains overtime all night trying to figure out how long we must lie on one spot in the bed to give sufficient time to the next spot to get noticeably cooler—

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